NASA News

National Aeronautics and
Space Administration
Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release
January 2, 1990
2 pm CST

Jeffrey Carr
RELEASE NO. 90-001

ASTRONAUT CREW NAMED TO INTERNATIONAL MICROGRAVITY MISSION

USAF Col. Ronald J. Grabe has been named to command STS-42, a nine-day mission aboard the Space Shuttle Columbia in December, 1990. Stephen S. Oswald will be the pilot, and William F. Readdy will fly as a mission specialist. Mary L. Cleave, Ph.D., and Norman E. Thagard, Ph.D., were assigned to the flight as mission specialists in June, 1989.

Columbia's cargo bay will carry the International Microgravity Laboratory (IML-1) in which five NASA astronauts and two payload specialists will conduct a variety of studies and experiments in the fields of materials processing and life sciences.

The two payload specialists will be named in the near future.

Grabe, commanding his first Shuttle mission, will make his third flight in space. He flew previously as pilot on STS-51J in October, 1985, and on STS-30 in May, 1989. He was born June 13, 1945 in New York, NY.

Oswald will make his first space flight. He was born June 30, 1951, in Seattle, WA, but considers Bellingham, WA, to be his hometown.

Readdy, also making his first flight, was born January 24, 1952, in Quonset Point, RI, but considers McLean, VA, to be his hometown.

Cleave will make her third space flight, having flown as mission specialist on STS 61-B in November, 1985, and on STS-30 in May, 1989. She was born February 5, 1947, in Southampton, NY.

Thagard will make his fourth space flight. He flew as mission specialist on STS-7 in June, 1983, on STS 51-B in April, 1985, and on STS-30 in May, 1989. Thagard was born July 3, 1943, in Marianna, FL, but considers Jacksonville, FL, to be his hometown.

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For Release:

Jeffrey Carr
RELEASE NO. 90-002

January 3, 1990

NOTE TO EDITORS: STS-32 INFLIGHT CREW PRESS CONFERENCE

A press conference with the STS-32 astronauts aboard the Space Shuttle Columbia will be conducted during the upcoming mission.

Accredited news media who wish to participate must be located at the Johnson Space Center in Houston. The exact date for the event has yet to be determined, but is expected to occur after the primary mission objectives have been met.

The news conference will be broadcast live on NASA Select television and available for live use and rebroadcast. NASA Select programming is carried on RCA SATCOM F2R, transponder 13, located at 72 degrees West Longitude. Media may also monitor the event live from various NASA field centers.

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NASA News

National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release

Jeffrey Carr
RELEASE NO. 90-006

January 17, 1990
3:00 p.m.EST

1990 ASTRONAUT CANDIDATES SELECTED

In the first of what will become standard biennial selections, 23 new astronaut candidates have been named for the Space Shuttle program.

The candidates were chosen from among 1,945 qualified applicants, 106 of whom received interviews and medical examinations between September and November, 1989. They will report to the Johnson Space Center in July to begin a year of training and evaluation, after which they will receive technical assignments leading to selection for Shuttle flight crews.

The 1990 group consists of 7 pilot candidates and 16 mission specialist candidates, including 11 civilians and 12 military officers. Among the 5 women selected are 3 military officers, including the first woman to be named as a pilot candidate, and the first Hispanic woman to be chosen. A listing of the candidates and biographical data follows.

# # #

1990 ASTRONAUT CANDIDATES

Lcdr. Daniel W. Bursch	U.S. Navy	Mission Specialist
Dr. Leroy Chiao	Civilian	Mission Specialist
Maj. Michael R. U. Clifford	U.S. Army	Mission Specialist
Kenneth D. Cockrell	Civilian	Pilot
Maj. Eileen M. Collins	U.S. Air Force	Pilot
Capt. William G. Gregory	U.S. Air Force	Pilot
Maj. James D. Halsell, Jr.	U.S. Air Force	Pilot
Dr. Bernard A. Harris, Jr.	Civilian	Mission Specialist
Capt. Susan J. Helms	U.S. Air Force	Mission Specialist
Dr. Thomas D. Jones	Civilian	Mission Specialist
Maj. William S. McArthur, Jr.	U.S. Army	Mission Specialist
Dr. James H. Newman	Civilian	Mission Specialist
Dr. Ellen Ochoa	Civilian	Mission Specialist
Maj. Charles J. Precourt	U.S. Air Force	Pilot
Capt. Richard A. Searfoss	U.S. Air Force	Pilot
Dr. Ronald M. Sega	Civilian	Mission Specialist
Capt. Nancy J. Sherlock	U.S. Army	Mission Specialist
Dr. Donald A. Thomas	Civilian	Mission Specialist
Dr. Janice E. Voss	Civilian	Mission Specialist
Capt. Carl E. Walz	U.S. Air Force	Mission Specialist
Maj. Terrence W. Wilcutt	U.S. Marine Corps	Pilot
Dr. Peter J. K. Wisoff	Civilian	Mission Specialist
Dr. David A. Wolf	Civilian	Mission Specialist

BIOGRAPHICAL DATA

NAME: Daniel W. Bursch, Lt. Cmdr., USN, Mission Specialist

BIRTHPLACE/DATE: July 25, 1957 - Bristol, Pennsylvania

RESIDENCE: Pacific Grove, California

EDUCATION: Vestal Senior High School, Vestal, New York
BS, Physics, US Naval Academy, 1979

CURRENT POSITION: Student, US Naval Postgraduate School

PARENTS: Mr. & Mrs. Donald D. Bursch, Charlotte, North Carolina

MARITAL STATUS: Single. One child.

NAME: Leroy Chiao, Ph.D., Mission Specialist

BIRTHPLACE/DATE: August 28, 1960 - Milwaukee, Wisconsin

RESIDENCE: Danville, California

EDUCATION: Monte Vista High School, Danville, California
BS, Chemical Engineering, Univ. of California, Berkeley, 1983
MS, Chemical Engineering, Univ. of California, Santa Barbara, 1985
Ph.D., Chemical Engineering, Univ. of California, Santa Barbara, 1987

CURRENT POSITION: Research Engineer, Lawrence Livermore National Laboratory, Livermore, California

PARENTS: Mr. and Mrs. Tsu Tao Chiao, Fairfield, California

MARITAL STATUS: Single

NAME: Michael R. U. Clifford, Major, USA, Mission Specialist

BIRTHPLACE/DATE: October 13, 1952 - Norton AFB, California

RESIDENCE: Seabrook, Texas

EDUCATION: Ben Lomond High School, Ogden, Utah
BS, Basic Science, US Military Academy, 1974
MS, Aerospace Engineering, Georgia Tech., 1982

CURRENT POSITION: Vehicle Integration Test Engineer
Johnson Space Center
Houston, Texas

PARENTS: John M. Uram, Deceased
Lenore C. Clifford, Ogden, Utah

MARITAL STATUS: Married to the former Nancy Elizabeth Brunson.

NAME: Kenneth D. Cockrell, Pilot

BIRTHPLACE/DATE: April, 9, 1950 - Austin, Texas

RESIDENCE: Houston, Texas

EDUCATION: Rockdale High School, Rockdale, Texas
BS, Mechanical Engineering, Univ. of Texas, 1972
MS, Aero Systems, Univ. of Florida, 1974
U.S. Naval Test Pilot School, Patuxent River, Maryland

CURRENT POSITION: Aerospace Engineer & Research Pilot
NASA/Johnson Space Center
Houston, Texas

PARENTS: Mr. & Mrs. Buford D. Cockrell, Westminister, South Carolina

MARITAL STATUS: Married to the former Joan Denise Raines.

NAME: Eileen M. Collins, Major, USAF, Pilot

BIRTHPLACE/DATE: November 19, 1956 - Elmira, New York

RESIDENCE: Edwards, California

EDUCATION: Elmira Free Academy, Elmira, New York
BA, Math, Syracuse Univ., 1978
MS, Operations Research, Stanford Univ., 1986
MA, Space Systems Management, Webster Univ., 1989

CURRENT POSITION: Student
USAF Test Pilot School
Edwards AFB, California

PARENTS: James E. Collins, Elmira, New York
Rose Marie Collins, Elmira, New York

MARITAL STATUS: Married to James P. Youngs

NAME: William G. Gregory, Captain, USAF, Pilot

BIRTHPLACE/DATE: May 14, 1957 - Lockport, New York

RESIDENCE: Edwards, California

EDUCATION: Lockport Senior High School, Lockport, New York
BS, Engineering Science, USAF Academy, 1979
MS, Engineering Mechanics, Columbia Univ., 1980
MS, Management, Troy State, 1984

CURRENT POSITION: Test Pilot
Edwards AFB, California

PARENTS: Mr. & Mrs. William Gregory, Gilbert, Arizona

MARITAL STATUS: Married to the former Mary Elizabeth Harney.

NAME: James D. Halsell, Jr., Major, USAF, Pilot

BIRTHPLACE/DATE: September 29, 1956 - Monroe, Louisiana

RESIDENCE: Edwards AFB, California

EDUCATION: West Monroe High School, West Monroe, Louisiana
BS, Engineering, USAF Academy, 1978
MS, Management, Troy State, 1983
MS, Space Operations, AF Institute of Technology, 1985

CURRENT POSITION: F-16 & SR-71 Test Pilot
Edwards AFB, California

PARENTS: Mr. & Mrs. James D. Halsell, West Monroe, Louisiana

MARITAL STATUS: Single

NAME: Bernard A. Harris, Jr., M.D., Mission Specialist

BIRTHPLACE/DATE: June 26, 1956 - Temple, Texas

RESIDENCE: Houston, Texas

EDUCATION: San Antonio High School, San Antonio, Texas
BS, Biology, Univ. of Houston, 1978
MD, Texas Tech Univ., 1982

CURRENT POSITION: Medical Officer
NASA/Johnson Space Center
Houston, Texas

PARENTS: Bernard A. Harris, Sr., Philadelphia, Pennsylvania
Gussie H. Burgess, San Antonio, Texas

MARITAL STATUS: Married to the former Sandra Faye Lewis.

NAME: Susan J. Helms, Captain, USAF, Mission Specialist

BIRTHPLACE/DATE: February 26, 1958, Charlotte, North Carolina

RESIDENCE: Alberta, Canada

EDUCATION: Parkrose Senior High School, Portland, Oregon
BS, Aerospace Engineering, USAF Academy, 1980
MS, Aeronautics/Astronautics, Stanford Univ., 1985

CURRENT POSITION: Flight Test Engineer
Aerospace Engineering Test Establishment
Alberta, Canada

PARENTS: Mr. & Mrs. Patrick G. Helms, Albuquerque, New Mexico

MARITAL STATUS: Single

NAME: Thomas D. Jones, Ph.D., Mission Specialist

BIRTHPLACE/DATE: January 22, 1955 - Baltimore, Maryland

RESIDENCE: Fairfax, Virginia

EDUCATION: Kenwood Senior High School, Baltimore, Maryland
BS, Basic Sciences, USAF Academy, 1977
Ph.D.., Planetary Science, Univ. of Arizona, 1988

CURRENT POSITION: Scientist
CIA, Office of Research & Development
Washington, DC

PARENTS: Mr. & Mrs. David Jones, Essex, Maryland

MARITAL STATUS: Married to the former Elizabeth Lynn Fulton.

NAME: William S. McArthur, Jr., Major, USA, Mission Specialist

BIRTHPLACE/DATE: July 26, 1951 - Lauringburg, North Carolina

RESIDENCE: Houston, Texas

EDUCATION: Red Springs High School, Red Springs, North Carolina
BS, Applied Sci. & Engr., US Military Academy, 1973
MS, Aerospace Engineering, Georgia Tech, 1983

CURRENT POSITION: Vehicle Integration Test Engineer
Johnson Space Center
Houston, Texas

PARENTS: William S. McArthur, Deceased
Edith P. Avant, Wakulla, North Carolina

MARITAL STATUS: Married to the former Cynthia Kathryn Lovin.

NAME: James H. Newman, Ph.D., Mission Specialist

BIRTHPLACE/DATE: October 16, 1956 - Trust Territory of the Pacific Islands

RESIDENCE: Houston, Texas

EDUCATION: La Jolla High School, La Jolla, California
BA, Physics, Dartmouth College, 1978
MA, Physics, Rice Univ., 1982
Ph.D., Physics, Rice Univ., 1984

CURRENT POSITION: Simulation Supervisor
NASA/Johnson Space Center
Houston, Texas

PARENTS: William A. Newman, La Jolla, California
Ruth A. Newman, La Jolla, California

MARITAL STATUS: Single

NAME: Ellen Ochoa, Ph.D., Mission Specialist

BIRTHPLACE/DATE: May 10, 1958 - Los Angeles, California

RESIDENCE: Los Altos, California

EDUCATION: Grossmont High School, La Mesa, California
BS, Physics, San Diego State, 1980
MS, Electrical Engineering, Stanford Univ., 1981
Ph.D.., Electrical Engineering, Stanford Univ., 1985

CURRENT POSITION: Optical Physicist
NASA/Ames Research Center
Moffett Field, California

PARENTS: Joseph L. Ochoa and
Rosanne Ochoa, La Mesa, California

MARITAL STATUS: Single

NAME: Charles J. Precourt, Major, USAF, Pilot

BIRTHPLACE/DATE: June 29, 1955 - Waltham, Massachusetts

RESIDENCE: Middletown, Rhode Island

EDUCATION: Hudson High School, Hudson, Massachusetts
BS, Aeronautical Engineering, USAF Academy, 1977
MS, Management, Golden Gate U., 1988

CURRENT POSITION: Student
Naval War College of Command and Staff
Newport, Rhode Island

PARENTS: Mr. & Mrs. Charles A. Precourt, Hudson, Massachusètts

MARITAL STATUS: Married to the former Lynne Denise Mungle

NAME: Nancy J. Sherlock, Captain, USA, Mission Specialist

BIRTHPLACE/DATE: December 29, 1958 - Wilmington, Delaware

RESIDENCE: Houston, Texas

EDUCATION: Troy High School, Troy, Ohio
BA, Biological Science, Ohio State, 1980
MS, Safety Engineering, Univ of Southern CA., 1985

CURRENT POSITION: Flight Simulation Engineer
Johnson Space Center
Houston, Texas

PARENTS: Mr. & Mrs. Warren F. Decker, Troy, Ohio

MARITAL STATUS: Married to Richard J. Sherlock

NAME: Donald A. Thomas, Ph.D., Mission Specialist

BIRTHPLACE/DATE: May 6, 1955 - Cleveland, Ohio

RESIDENCE: Seabrook, Texas

EDUCATION: Cleveland Heights High School, Cleveland, Ohio
BS, Physics, Case Western Univ., 1977
MS, Materials Science, Cornell Univ., 1980
Ph.D., Materials Science, Cornell Univ., 1982

CURRENT POSITION: Materials Engineer
NASA/Johnson Space Center
Houston, Texas

PARENTS: William G. Thomas, Sr., Englewood, Florida
Irene M. Thomas, American Embassy, Burma

MARITAL STATUS: Married to the former Kristine R. Castagnola

NAME: Terrence W. Wilcutt, Major, USMC, Pilot

BIRTHPLACE/DATE: October 31, 1949 - Russellville, Kentucky

RESIDENCE: NAS Patuxent River, Maryland

EDUCATION: Southern High School, Louisville, Kentucky
BA, Math, Western Kentucky Univ., 1974

CURRENT POSITION: Test Pilot/Project Officer
NAS Patuxent River, Maryland

PARENTS: Mr. & Mrs. George B. Wilcutt, Russellville, Kentucky

MARITAL STATUS: Married to the former Robin Jo Moyers

NAME: Peter J. K. Wisoff, Ph.D., Mission Specialist

BIRTHPLACE/DATE: August 16, 1958 - Norfolk, Virginia

RESIDENCE: Houston, Texas

EDUCATION: Norfolk Academy, Norfolk, Virginia
BS, Physics, Univ. of Virginia, 1980
MS, Physics, Stanford Univ., 1982
Ph.D., Applied Physics, Stanford Univ., 1986

CURRENT POSITION: Asst. Professor
Rice University
Dept. of Electrical & Computer Engineering
Houston, Texas

PARENTS: Mr. & Mrs. Carl P. Wisoff, Norfolk, Virginia

MARITAL STATUS: Single

NAME: David A. Wolf, M.D., Mission Specialist

BIRTHPLACE/DATE: August 23, 1956 - Indianapolis, Indiana

RESIDENCE: Houston, Texas

EDUCATION: BS, Electrical Engineer, Purdue Univ., 1978
M.D., Indiana Univ., 1982

CURRENT POSITION: Aerospace Medical Officer
NASA/Johnson Space Center
Houston, Texas

PARENTS: Harry Wolf, Indianapolis, Indiana
Dorothy Wolf, Indianapolis, Indiana

MARITAL STATUS: Single

# # #

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For Release

Jeffrey Carr
RELEASE NO. 90-007

January 24, 1990

NOTE TO EDITORS: STS-32 POST FLIGHT CREW PRESS CONFERENCE

The astronaut crew of Shuttle mission STS-32 will meet with news media next week to discuss their recent flight which featured the deployment of a SYNCOM-IV satellite and the retrieval of the Long Duration Exposure Facility (LDEF).

The news conference will be held at 1 pm central time on Tuesday, January 30, at the Johnson Space Center and will be broadcast live on NASA Select television. Accredited media who wish to participate may do so in the building 2 briefing room at JSC, or via support audio from other NASA field centers.

NASA Select programming is carried on RCA SATCOM F2R, transponder 13, located at 72 degrees West Longitude.

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For Release

Jeffrey Carr
RELEASE: 90-009

January 25, 1990

SCIENCE PAYLOAD COMMANDERS NAMED; CARTER REPLACES CLEAVE ON IML-1

In a move to provide long range leadership in the development and planning of payload crew science activities, four Space Shuttle mission specialists currently assigned to STS missions have been designated as payload commanders.

The payload commanders will have overall crew responsibility for the planning, integration and on-orbit coordination of payload/Space Shuttle activities on their mission. The crew commander will retain overall responsibility for mission success and safety of flight.

Named as payload commander for STS-42, the first flight of the International Microgravity Laboratory (IML-01) set for late 1990, is mission specialist Norman E. Thagard, M.D. In addition, Navy Capt. Manley L. "Sonny" Carter, M.D., has been named as a mission specialist on the IML crew, replacing Mary L. Cleave, Ph.D., who has resigned her flight assignment for personal reasons.

Kathryn D. Sullivan, Ph.D., will serve as payload commander for STS-45, the first flight of the Atmospheric Laboratory for Applications and Science (ATLAS-01), slated for launch in 1991.

Payload commander for STS-46 is Jeffrey A. Hoffman, Ph.D. The STS-46 mission, set for 1991, will feature the first flights of the European Retrievable Carrier (EURECA), developed by the European Space Agency, and the Tethered Satellite System, a joint project between NASA and the Italian space agency, Agenzia Spaziale Italiana.

Air Force Lt. Col. Mark Lee will be the payload commander on mission STS-47 for Spacelab-J, a joint science venture between NASA and the Japanese National Space Development Agency, NASDA, also in 1991.

-more-

Future assignments of payload commanders normally will be made in advance of the remainder of the flight crew in order to help identify and resolve training issues and operational constraints prior to crew training.

The role of the payload commander also is expected to serve as a foundation for the development of a space station mission commander concept.

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NASA News

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Houston, Texas 77058
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For Release:

Linda Matthews Copley
RELEASE NO: 90-010

January 26, 1990

FLUOR-DANIEL SERVICES, INC., AWARDED CONSTRUCTION CONTRACT

NASA's Johnson Space Center (JSC), Houston, has selected Flour-Daniel Services, Inc., Greenville, S.C., for negotiations leading to award of a cost-plus-award-fee contract for construction support services. The first contract year will begin on or about Feb. 1, 1990.

The contract covers a planned 5-year performance period which includes a 1-year basic period plus four 1-year options. Proposed cost and fee for the 5-year program, including yearly options, is approximately $27.5 million.

Services to be provided by Flour-Daniel include management, planning and execution of a broad variety of construction tasks at JSC, including the alteration of an existing physical plant.

- end -

NASA News

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For Release

Linda Matthews Copley
RELEASE NO: 90-011

January 26, 1990

HERNANDEZ ENGINEERING AWARDED INFORMATION SUPPORT CONTRACT

NASA's Johnson Space Center (JSC), Houston, has awarded a contract to Hernandez Engineering, Inc., Houston, for technical information and public affairs support. The basic period of performance began Jan. 1, 1990.

The cost-plus-fixed-fee contract is for a basic year effort plus four 1-year options. Estimated cost and fee for the basic year is valued at $7.7 million. If the options are exercised, the contract value will increase by $8.1 million for the first option, $8.5 million for the second option, $9.1 million for the third option and $9.7 million for the last option.

The effort involves approximately 205 employees, both at JSC and in other designated locations. The contract includes providing public affairs support services, correspondence and communications management, security support services, information resource management, documentation management, technical information support services and duplication, reproduction, microforms and distribution management.

The new contract was awarded under the 8(a) Small Business Administration program. The previous contractor, Omniplan, Inc., had provided these services to JSC since 1981 and is no longer under the 8(a) program.

- end -

NASA News

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For Release:

Jeffrey Carr
RELEASE NO. 90-013

February 1, 1990

SHUTTLE ASTRONAUTS TO ATTEND SOVIET SPACE LAUNCH

The National Aeronautics and Space Administration has accepted an invitation for Shuttle astronauts to attend a Soviet manned space launch and to tour space facilities in the Soviet Union this month. The invitation was extended to NASA astronauts earlier this year by General Alexei Leonov, Deputy Head of the Y. A. Gagarin Cosmonaut Training Center.

Members of the astronaut delegation traveling to the Soviet Union are JSC Deputy Director Paul J. Weitz, Chief Astronaut Daniel C. Brandenstein, Ronald J. Grabe, and Jerry L. Ross.

The group is scheduled to arrive in Moscow on February 9, and will travel to Baikonour the following day to tour launch facilities there and to view a manned launch. The group will also travel to Star City, near Moscow, to visit the Gagarin Cosmonaut Training Center and to the Manned Spaceflight Control Center in Kaliningrad, before returning on February 14.

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For Release

Linda Matthews Copley
RELEASE NO: 90-017

February 15, 1990

JOHNSON SPACE CENTER CONTRIBUTES $973 MILLION TO HOUSTON AREA ECONOMY IN FY89

NASA's Johnson Space Center contributed approximately $973 million to the Houston area economy in Fiscal Year (FY) 1989 ending Sept. 30. This is an increase of $400 million over the previous year. JSC received $1.9 billion, or about 17 percent of the $11 billion appropriated for the agency's FY89 total.

The center's expenditures locally included $157 million in federal salaries, $3 million in air travel, and $812 million in goods and services from over 1100 local businesses, averaging $3.7 million for each working day.

The major portion of JSC's budget, $1.6 billion, went for Research and Development (R&D) and Space Flight Control and Data Communications. Research and Program Management (R&PM), covering everything from salaries, gas and electric utility bills, and mowing the grass, took $301 million. Facility construction accounted for the remaining $14 million.

Utility costs for the center for FY89 were $1.6 million for gas, $7.4 million for electricity, $6.8 million for (phone and electronic) communications, and $300,000 for the purchase of surface water and sewage treatment.

Since moving to Houston in 1962, total JSC funding from NASA equals $37.3 billion in actual dollars through Sept. 30, 1989. That total includes $3.9 billion for R&PM, $33 billion for R&D, and $351 million for construction of facilities overall in the past 28 years.

JSC spent $1.10 billion in FY89 with both Texas firms and out-of-state companies that pay salaries to employees in their Texas operations. That places Texas third behind California ($2.7 billion) and Florida ($1.2 billion) in states receiving NASA funds for contracts or grants. Maryland ranks fourth ($753 million) and Alabama fifth ($699 million). JSC has paid out $2.6 billion in civil service salaries since 1962.

-more-

The center employed 3,773 civil servants in FY89 compared to 3,552 the year before. Peak space industry employment in the JSC area occurred in 1989, with 11,120 aerospace industry and support contractor personnel working on or near the center. The peak year for numbers of federal employees at JSC was 1967, with 5,261 positions.

By the end of FY 89, the average federal salary was $43,450. The average age of JSC employees was 42, with 1,927 of those having earned bachelors degrees, 648 with masters degrees, and 191 have doctorates, law, or medical degrees.

NASA News

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For Release

Jeffrey E. Carr
RELEASE NO. 90-020

February 26, 1990
2 p.m. CST

VETERAN SHUTTLE ASTRONAUT WILLIAMS TO RETIRE FROM NASA, NAVY

Navy Capt. Donald E. Williams, veteran of two Shuttle flights, will retire from NASA and the Navy, effective March 1, to pursue a career in private industry.

"I reached my goal as a pilot, which was to command a mission," said Williams. "Now it's time to go on to other challenges. JSC and NASA have been a wonderful place to work and I'm proud to have been a part of the team."

Williams was selected by NASA as an astronaut in 1978, and made his first space flight in April 1985 as pilot of Discovery on mission STS-51D, which included the first unscheduled rendezvous and spacewalk. He flew again as crew commander of Atlantis in October 1989 on mission STS-34, highlighted by the deployment of the Jupiter probe, Galileo.

Prior to STS-34, Williams served as chief of the Astronaut Office Mission Support Branch. He also served as Deputy Manager of Operations Integration in the NSTS Program Office, and as Deputy Chief, Aircraft Operations Division during his years with NASA.

Williams will be joining Science Applications International Corporation in Houston as Senior Systems Engineer.

# # #

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For Release:

March 2, 1990

Mark Hess
Headquarters, Washington, D.C.
(Phone: 202/453-4164)

Charles Redmond
Headquarters, Washington, D.C.
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Johnson Space Center, Houston
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Carter Dove
Goddard Space Flight Center
(Phone: 301/286-5565)

RELEASE: N90-13

EDITORS NOTE: HST, STS-31 MISSION AND CREW BRIEFINGS SET

A series of background briefings on the Hubble Space Telescope, the deployment mission, secondary payloads and the astronaut pre-flight press conference for Space Shuttle mission STS-31, now set for launch on April 12, will be held March 15 and 16 at the NASA Goddard Space Flight Center, Greenbelt, Md., and March 19 ~~and 20~~ at the NASA Johnson Space Center, Houston.

The briefing schedule follows (all times Eastern Standard):

- o Thursday, March 15, Goddard Visitor Center

  9 a.m. Hubble Space Telescope Science
  12 p.m. Preparations, deploy, verification, servicing
  5 p.m. "How to cover mission" briefing

- o Friday, March 16, Goddard and Space Telescope Science Institute, Baltimore

  10 a.m. and 2 p.m. Press tours of HST control facilities (Goddard) or HST science operations areas (Institute)

-more-

o Monday, March 19, Johnson Space Center

9:30 a.m.	STS-31 Flight Director mission overview
10:30 a.m.	Secondary, middeck and student experiments
11:30 a.m.	Flight Crew Press Conference (Followed by round -robin media interviews)

Briefings will be carried live on NASA Select television, available on Satcom F2R, transponder 13 at 3960 MHz. Two-way question and answer capability will be available at other NASA centers and at Headquarters.

During the mission, media wishing to focus attention on the Hubble Space Telescope activities are advised to contact Goddard Public Affairs, 301/286-5565, to arrange for accreditation at the Goddard News Center. Goddard will operate a 24-hour-a-day newsroom during the mission and will have telescope scientists and managers available for briefings and interviews.

- end -

NASA News

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For Release

Pam Alloway
RELEASE NO.: 90-021 March 5, 1990

NOTE TO SCIENCE EDITORS: NASA JOHNSON SPACE CENTER HOSTS 21ST LUNAR AND PLANETARY SCIENCE CONFERENCE MARCH 12-16, 1990.

Scientists from around the world will converge on Houston's Johnson Space Center March 12-16 to discuss the latest research on lunar and planetary science, including preliminary findings from the Long Duration Exposure Facility (LDEF) retrieved on STS-32 in January.

About 750 scientists are expected to attend the 21st Lunar and Planetary Science Conference which will feature sessions on Mars, the Voyager 2 mission, LDEF, and various lunar topics.

There will be two public sessions: a discussion March 12 of President Bush's Moon/Mars exploration initiative featuring JSC Director Aaron Cohen; and a special Voyager 2 session March 14 featuring the California Institute of Technology's Andrew Ingersoll. The Voyager 2 spacecraft in August 1989 sent back data and images of Neptune. Both programs will begin at 8 p.m. in Teague auditorium in Bldg. 2 and are free of charge.

Concurrent sessions are scheduled each day at 8:30 a.m. and 1:30 p.m. On the conference's final day - March 16 - sessions are scheduled for 8:30 a.m. and 10:15 a.m. The sessions will take place in the Gilruth Center at JSC.

Scientists and scholars will present about 375 papers during the conference. Technical sessions will cover such subjects as: a Venus overview prior to Magellan; lunar meteorites, geology and resource utilization; cosmic rays; comets and orbital dust collection; the outer solar system; Martian geophysical and tectonic evolution, volcanic evolution, climate histories and craters; solar nebula and planetary origins; heavy metal meteorites; Triton and Phobos; and planetary geological processes.

-more-

An 8:30 a.m. March 14 technical session will feature discussions on interplanetary dust and LDEF findings. The STS-32 shuttle crew retrieved LDEF, a bus-sized satellite stranded in space for nearly six years, from space Jan. 12.

Media interested in covering the conference should register in the Gilruth Center's Room 216 from 8 a.m. to 5 p.m. March 12-15 or in the morning of March 16. Conference abstract volumes containing condensed versions of several scientists' papers will be available at the Gilruth Center or on request from JSC's newsroom.

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AC 713 483-5111

For Release

Kari Fluegel
Release No. 90-023

March 6, 1990
3 p.m. CST

NASA AWARDS OPERATIONS SUPPORT CONTRACT TO ROCKWELL TEAM

NASA today announced the selection of Rockwell Space Operation Company, Houston, Texas, for negotiations of a 10-year cost-plus-award-fee Operations Support Contract totaling $814 million.

The contract for the Mission Operations Directorate provides support for operations concepts development, and for mission, flight crew, and facility operations for the Space Station Freedom Program and other space flight programs supported by the Johnson Space Center. Support for the Space Shuttle Program and related projects is not included in the OSC.

Major tasks under the OSC are management functions and systems, mission operations, training, ground facility support, flight crew operations directorate support, and other support to include multiple program operations with responsibility distributed throughout NASA.

The 10-year performance contract, which includes an eight-year basic period and a two-year option, is set to begin on or around April 1.

Subcontractors for Rockwell are Barrios Technology Inc., Bendix Field Engineering Corp., Omniplan Corp., Science Applications International Corp., Systems Management American Corp. and UniSys-Air Defense and Space Systems Division.

Other companies and subcontractors submitting proposals were:

• Ford Aerospace Corporation of Houston Texas with Booz, Allen and Hamilton Inc., GEO Control Systems Inc., GE Government Services, Hernandez Engineering Inc., and TRW Defense Systems Group;

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• Lockheed Engineering and Services Corp. of Houston, Texas, with Electronic Data Systems Federal Corp; and

• McDonnell Douglas Space Systems Co. of Houston, Texas, with Boeing Aerospace Operations Inc., Computer Sciences Corp., International Business Machines Corp. Systems and Integration Division, McDonnell Douglas-Douglas Aircraft Company, and Write Right Technical Publication Inc.

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NASA News

National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
Houston Texas 77058
AC 713 483-5111

For Release

NASA'S FIRST SPACEWALK IN OVER FIVE YEARS IS SET FOR NOVEMBER

James Hartsfield
RELEASE NO. 89-022

March 7, 1990

In November, astronauts will step out the door 243 nautical miles above Earth for the first NASA spacewalk in five years, or as it might be better described, a space ride.

Shuttle mission STS-37 crew members Jerry Ross and Jay Apt will conduct the Crew and Equipment Translation Aid (CETA) flight experiment in the payload bay of Atlantis. Ross and Apt will try three different methods of propelling a small cart along rails in the bay in an effort to identify the best way to move on the exterior of Space Station Freedom. Necessity, good timing and enthusiasm have pushed CETA a long way in a short time.

"EVA's are something it's easy to get people excited about," said Ed Whitsett, CETA project manager at the Johnson Space Center. "People have been willing to make a lot of sacrifices to pull this all together."

CETA didn't exist until June 1989, after the final payload review for STS-37 had already taken place, Whitsett said. But the experiment, through long hours put in by those supporting it, came together and was ready for the previously scheduled launch of STS-37 this June. The flight crew played a large part in getting the experiment on track for the prospective launch date.

Although mechanical tests and procedure checks of CETA are the primary reason behind the spacewalk, an important contributing factor is the simple need for NASA to take a walk on the high side again.

"We're excited about it," explained Ross, who will make his third spacewalk. "We're anxious to build up the EVA team again, to build up the experience base. We see a large quantum jump ahead in the amount of time spent EVA as space station gets closer."

The five-year lapse has taken a toll on experienced EVA personnel available among astronauts, flight controllers, engineers and other team members.

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"The crew needs to get operational experience for EVAs and we need to get EVA inputs for space station design -- it's a perfect match," Whitsett said.

By coincidence, Ross was the last American to shut the door on space, after conducting two spacewalks on STS-61B in late November 1985.

"When I got back inside after my second EVA on 61B, I thought that was the finale ... I'd never have that opportunity again," Ross said. "But through a strange twist, I'm going to do this one. You know, I smile a lot thinking about it. It is really a fantastic experience you just can never fully explain to anyone."

A method for crew members to move up and down the 400-foot long space station truss structure has always been planned, but the original concept was akin to a large space golf cart.

"We thought it was overkill," Whitsett said. "It was like taking a bus when all you need to do is go out to the back field on your motorcycle."

Although the simplest method of movement would be a hand-over-hand pull down the truss, with no special equipment except a tether, such a method could cause excessive wear and tear on the truss and suit. Also, it would be difficult to carry cargo.

CETA may be the answer. It is a small cart that runs along a track which can be built into the Space Station Freedom truss. Astronauts would ride prone on CETA, and could pull equipment along behind them. But how to propel the cart, how much stress the various methods of movement would put on the truss and the astronaut, and how fast it can be comfortably and safely moved are questions to be studied on STS-37.

The cart will be mounted on a track in the payload bay, skirted by two handrails for half of the bay and by one rail, to be extended following deployment of the Gamma Ray Observatory (GRO), for the entire distance _ 46 feet. Apt and Ross will move the cart in three different fashions: lying prone, one crewman will pull himself along the track hand over hand; with the astronaut angled upward slightly, the cart will be changed to accomodate a lever that can be pumped to move it up and down the track, much like an old railroad handcar; and, also with the crewman at about a 45-degree angle, the cart will be propelled by hand-pushed pedals similiar to a bicycle _ the pedals will generate electricity to drive the cart.

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The first two versions of CETA are called the manual and mechanical cart designs. The third is the electrical design. All of the versions include brakes and provisions for moving in reverse, which, for the electrical version consists of turning the pedals backward, creating a reverse current that in turn drives the electric motor backward.

Ross and Apt will evaluate the amount of energy required to move each version; comfort; how secure they feel moving in them; control; and visibility. Sensors on the track and cart will provide information on the amount of stress each version places on the track and handrails. Although CETA is a one-person cart, Ross and Apt also will propel themselves "piggyback" on each version to test the cart's cargo-carrying ability.

The astronauts also will test a one-person "tether shuttle," a very simple, small cart designed to attach a tether to so it can slide along as an astronaut pulls hand-over-hand along the railway. The "tether shuttle" is intended as a way for one crew member, carrying no extra cargo, to move around if the main cart were in use or broken.

CETA will take up most of the single, six-hour spacewalk planned, but Apt and Ross will do some additional tasks. Using the shuttle's robot arm, they will evaluate how much flexibility can be allowed in the Astronaut Positioning System (APS) and how quickly an astronaut can be moved comfortably at the end of an arm. The APS is a manipulator arm planned for use when astronauts begin assembling the truss structure for Space Station Freedom. It will move an astronaut, standing in foot restraints at its end, from place to place to assemble the various joints.

Using the Crew Loads Instrumented Pallet (CLIP), an EVA workstation mounted on the side of the shuttle's bay, the astronauts will gather more information on stresses imparted to structures during space work. The pallet part of CLIP has flown twice aboard the shuttle.

The results of CETA and the other EVA experiments scheduled on STS-37 could make some designs for Space Station Freedom spacewalk aids less complex, Whitsett said.

"It has been kind of a crash program, but there's been a real fine team," Whitsett said. "It's fallen into place quickly and smoothly."

The launch of STS-37 originally was scheduled for June, but it has been reset for November. The delay is disappointing for those who've worked on CETA, but the extra time won't be wasted.

"The time will allow for some things we were a little pressed on to be double-checked," Whitsett said.

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NASA photographs are available to illustrate this release and can be obtained by contacting the JSC Public Affairs Still Photography Library at (713) 483-4231. The identification numbers of related photographs include: S90-27795; S89-50836; S90-28547; S89-50817; S89-46985; S89-50846; S90-27794. The photographs include a group picture of the projects leading engineers; astronauts Jerry Ross and Jay Apt training in JSC's Weightless Environment Training Facility swimming pool; and engineers conducting various evaluations of the CETA hardware.

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For Release:

Pam Alloway
RELEASE NO. 90-025

March 16, 1990

SHUTTLE TRASH COMPACTOR TO SERVE AS EXTENDED DURATION FLIGHT TREASURE

When Fred Abolfathi and J.B. Thomas work on one of their many projects at Johnson Space Center, a detailed test objective scheduled to fly on STS-35 in May, they don't have any problem finding material to test it out - they just reach for the nearest trash can.

Abolfathi, a Lockheed Engineering and Science Corp. project engineer, and Thomas, a subsystems manager in JSC's Man-Systems Division, have spent the past year working on a trash compactor for the Space Shuttle. They've crushed hundreds of pop cans, squished thousands of memos, mutilated pounds of flight food containers, and even thrown in a couple of cans full of cat food, just to test odor containment. "So far we haven't had any trouble generating trash," Abolfathi said.

The experimental shuttle trash compactor is scheduled to fly on STS-35 for the first time as detailed test objective (DTO) 0634. The compactor will become an important part of shuttle hardware as NASA begins flying extended duration orbiter flights (EDO), said project managers. EDO missions mean more trash in a vehicle where stowage space already is extremely limited. The first 13 day EDO mission currently is scheduled in 1992. Plans call for the first 16 day EDO mission to occur in 1994.

"The goal of the EDO Trash Compactor is to reduce the trash to a manageable volume for EDO missions," said Thomas. "Each crew member generates about one-half cubic foot of trash per day."

Current projections indicate about 56 cubic feet of trash will be generated on the first 16 day EDO flight and those working on this project would like to reduce that number to 14 cubic feet, said Abolfathi.

The 48-pound compactor fits in place of a middeck locker and is operated manually. Trash is placed inside a polypropylene bag which, when full, is placed inside the chamber of the compactor.

One bag holds a volume equivalent to one-half cubic foot. A metal compactor door is closed securing the bag inside the chamber. A crew member then uses handles on either side of the compactor in a garden shear-type movement to engage gears which push a piston

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from the back of the chamber to the front, compressing the trash to a volume four times smaller. The piston compresses the trash using a force of about 60 pounds per square inch.

After the piston is moved as far forward as it was designed to go, the crew member retracts the piston, opens the compactor door, and pulls a strap to remove the bag from the chamber. The bag has a lid which houses a charcoal filter to contain odors, fluids and bacteria. A one way air valve in the lid allows air out of the bag, relieving pressure built up during compaction. Next, the entire package is placed inside the orbiter trash stowage compartment. The bags fit through an eight inch diameter hole in the middeck floor. This compartment, known as Volume F, normally is used for wet trash stowage.

Operating the EDO Trash Compactor could provide a type of exercise for the crew, Thomas said.

About 10 years ago Johnson Engineering Corp. in Boulder, Colo. began working on a concept for an orbiter trash compactor that could be developed commercially for recreational vehicles. Using that experience, the company bid on a contract in July 1989 to design a shuttle trash compactor.

The design has been tested and certified using a variety of items, including: food, water, flight trash, plastic and metal food containers, and teleprinter pages.

The current shuttle rehydratable food package, which does not crush well in the compactor, is being redesigned for EDO missions, Abolfathi said.

"The DTO is flying as a proof of concept for the compactor," said Abolfathi. "We'll prove the concept will work and results will be used to build two flight units."

During STS-35, crew members will experiment with various types of lids and bags, Abolfathi said. Thirty bags and lids will accompany the compactor into space.

The hardware is scheduled to be shipped to KSC March 19 to support the Crew Equipment Interface Test), said Hamid Tabibian, Man-System's Systems Development Section manager.

"We've always been interested in designing a trash compactor for the shuttle but we just couldn't justify flying it until extended duration flights began coming along," Tabibian said. "EDO missions will last up to 16 days and can have as many as seven people. The trash compactor will become essential for those types of missions."

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Photos available through JSC's Still Photo Library, (713) 483-4231. Photo numbers: S90-31435, S90-31434, S90-31433.

NASA News

National Aeronautics and
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For Release

Jeffrey E. Carr

April 16, 1990

RELEASE NO. 90-029

NOTE TO EDITORS: STS-35 (ASTRO-1) ASTRONAUT PRESS CONFERENCE

The astronaut crew for Shuttle mission STS-35 (ASTRO-1) will meet with news media on Friday, April 20, to discuss their roles in the flight, set for mid-May. The press conference will be held at the Johnson Space Center beginning at 9:30 a.m. cdt.

News media are invited to participate on location at JSC in Building 2, room 135, or via two-way audio from NASA Headquarters in Washington, D.C., the Marshall Space Flight Center in Huntsville, AL, the Goddard Space Flight Center in Greenbelt, MD, and the Kennedy Space Center in FL.

Live NASA Select television coverage will be carried on Satcom F2R, transponder 13.

Round robin interviews with the crew will be conducted immediately following the press conference. Media who wish to participate should notify the JSC news center, 713/483-5111, as soon as possible.

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NASA News

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For Release:

Jeffrey Carr
Release No. 90-033

May 24, 1990
11 a.m. CDT

SHUTTLE CREWS NAMED FOR 1991 MISSIONS (STS-43, STS-44, STS-45)

Astronaut crew assignments have been made for three Space Shuttle missions scheduled for early to mid 1991, bringing the total number of Shuttle crews currently in training to twelve.

Navy Capt. David M. Walker will command a crew aboard the Space Shuttle Atlantis on STS-44, a Department of Defense dedicated flight currently targeted for March, 1991. Air Force Lt. Col. Terence T. "Tom" Henricks will serve as pilot. Mission specialists for the flight will be F. Story Musgrave, M.D., Navy Lt. Cmdr. Mario Runco, Jr., and Army Lt. Col. James S. Voss.

Marine Col. Charles F. Bolden, Jr., will command Shuttle flight STS-45 (ATLAS-01), a mission dedicated to studying atmospheric phenomena from a laboratory aboard the Space Shuttle Columbia. Air Force Maj. Brian Duffy will serve as pilot. Mission specialists are payload commander Kathryn D. Sullivan, Ph.D., C. Michael Foale, Ph.D., and Navy Capt. David C. Leestma. Payload specialists for the mission, currently projected for April, 1991, are Michael L. Lampton, Ph.D., and Byron K. Lichtenburg, Ph.D. Sullivan, Foale, Lampton, and Lichtenburg had been previously named to the flight.

Air Force Col. John E. Blaha will command STS-43, a five day mission to deploy the Tracking and Data Relay Satellite, TDRS-E, planned for May, 1991. Serving as pilot aboard Discovery will be Navy Lt. Cmdr. Michael A. Baker. Mission specialists will be Shannon W. Lucid, Ph.D., G. David Low, and Army Lt. Col. James C. Adamson.

# # #

STS-43

Blaha has flown twice previously as pilot on STS-29 and STS-33. He was born August 26, 1942, in San Antonio, TX.

Baker will make his first space flight. He was born October 27, 1953, in Memphis, TN, but considers Lemoore, CA, to be his hometown.

Low, making his second Shuttle flight, served as mission specialist on STS-32. He was born February 19, 1956, in Cleveland, OH.

Adamson has flown previously as mission specialist on STS-28. He was born March 3, 1946, in Warsaw, NY, but considers Monarch, MT, to be his hometown.

Lucid will make her third flight, having flown as mission specialist on STS-51G and STS-34. She was born an American citizen in Shanghai, China, on January 14, 1943, and considers Bethany, OK, to be her hometown.

STS-44

Walker will make his third Shuttle flight, his second as commander. He flew previously on STS-51A as pilot, and as commander for STS-30. Walker was born May 20, 1944, in Columbus, GA, but consider Eustis, FL, to be his hometown.

Henricks, making his first space flight, was born July 5, 1952, in Bryan, OH, but considers Woodville, OH, to be his hometown.

Musgrave has flown three times previously on STS-6, STS-51F, and STS-33. He was born August 19, 1935, in Boston, MA, but considers Lexington, KY, to be his hometown.

Runco will also make his first space flight. He was born January 26, 1952, in Bronx, NY, but considers Yonkers, NY, to be his hometown.

Voss, also making his first flight into space, was born March 3, 1949, in Cordova, AL, but considers Opelika, AL, to be his hometown.

STS-45

Bolden receives his first command after two previous assignments as pilot for missions STS-61C and STS-31. He was born August 19, 1946, in Columbia, SC.

Duffy will be making his first trip to space. He was born June 20, 1953, in Boston, MA.

Sullivan, making her third flight, served as mission specialist for STS-41G and STS-31. She was born October 3, 1951, in Paterson, NJ, but considers Woodland Hills, CA, to be her hometown.

Leestma will make his third Shuttle flight, having flown as mission specialist on STS-41G and on STS-28. He was born May 6, 1949, in Muskegon, MI.

Foale will also make his first space flight. He was born an American citizen on January 6, 1957, in Louth, England, and considers Cambridge, England, to be his hometown.

Lampton will make his first trip to orbit. He was born March 1, 1941, in Williamsport, PA.

Lichtenburg will make his second space flight. He served as payload specialist on STS-9 (SL-1). Lichtenburg was born February 19, 1948, in Stroudsburg, PA.

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For Release

Mary Sandy
Headquarters, Washington, D.C.
(Phone: 202/453-2754)

June 7, 1990
Noon EDT

Del Harding
Ames Research Center, Mountain View, Calif.
(Phone: 415/604-9000)

Jeffrey Carr
Johnson Space Center, Houston
(Phone: 713-483/5111)

RELEASE: 90-77

VETERAN ASTRONAUT HAWLEY TO ACCEPT EXECUTIVE POSITION AT AMES

Dr. Dale Compton, Director of NASA's Ames Research Center, Mountain View, Calif., today named Astronaut Steven A. Hawley as the Center's Associate Director (acting). Hawley will assume his duties on July 29 as the center's third-ranking executive

"We are extremely pleased," Compton said, "to have someone with Dr. Hawley's administrative and scientific skills joining us at Ames."

Hawley, 38, has served as Deputy Chief of the Astronaut Office since 1987 and most recently as mission specialist aboard the Space Shuttle Discovery on mission STS-31 in April of this year. During that flight, he successfully delivered the Hubble Space Telescope to orbit using Discovery's robot arm and extended his total time in space to over 412 hours.

The three-time Shuttle flight veteran was selected as an astronaut in 1978. Hawley worked as a simulator pilot in the Shuttle software laboratory and on astronaut support crews for Shuttle missions STS-2, STS-3 and STS-4 before making his first space flight.

He first flew as a mission specialist on the maiden voyage of Discovery, STS-41D, in August 1984. Discovery's crew deployed three communcations satellites and activated the OAST-1 solar cell wing experiment. He made his second trip to orbit aboard Columbia on STS-61C in January 1986, during which Hawley participated in the deployment of the SATCOM KU satellite and conducted experiments in astrophysics and materials processing.

Hawley's hometown is Salina, Kansas. An honors graduate of the University of Kansas, he will be returning to the San Francisco bay, area, where he earned his Ph.D. in Astronomy and Astrophysics from the University of California, Santa Cruz, in 1977.

In 1988, Hawley was awarded the NASA Exceptional Service Medal. He is a member of the American Astronomical Society, the Astronomical Society of the Pacific, Sigma Pi Sigma and Phi Beta Kappa.

Hawley is married to the former Eileen M. Keegan of Redondo Beach, Calif. His parents, Dr. and Mrs. Bernard Hawley, live in Rancho Mirage, Calif.

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For Release:
June 28, 1990

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Release No. 90-035

NASA, UNIVERSITIES CONSORTIUM TO STUDY SPACE STATION ROBOTICS

A laboratory as big as Texas employing the state's brightest students will soon be put to work with NASA to aid in developing robotics for Space Station Freedom.

The NASA/JSC Universities Space Automation and Robotics Consortium will link robotics laboratories at Rice University, the University of Texas, the University of Texas at Arlington and Texas A&M University with JSC labs to study the robotics tasks planned for Space Station Freedom. The labs will be interconnected by a computer network to allow the universities to remotely control each other's robots as well as those at JSC. Experiments can then be carried out in what will essentially be a statewide lab. The project, proposed to NASA by the four schools, will be funded by a $240,000 grant to begin before October.

The consortium was formed by the schools in 1989, all of which, excluding UTA, have been participants in past NASA robotics research.

"With the interconnected labs and the consortium, we'll be able to take advantage of all the different areas of expertise exhibited by the schools," Carl Adams, NASA project engineer, said. The schools' areas of expertise include the machine vision and mobile robotics at Rice; manual controllers and modular robot architectures at UT; system architectures and artificial intelligence at A&M; and human performance and workloads at UTA.

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"People today use computer networks to exchange data, but we'll be using this network to control robots at the four universities and the JSC labs from remote facilities," said Prof. Rui de Figueiredo, Rice researcher and consortium chairman. "The universities got together and approached NASA with the idea to better coordinate our efforts and areas of specialty. It's a logical arrangement." The four universities jointly presented the proposed consortium to NASA, where Charles R. Price, chief of the Robotic Systems Development Branch at JSC, suggested a computer link among the labs to study simultaneous control of multiple robots.

The universities' areas of expertise are complementary, and, in addition to space station maintenance studies, an evaluation of future robotics applications in space will be conducted by the consortium. The connected labs will allow NASA a flexibility to use research conducted by the schools in a way that has not been possible before.

"We can be of great benefit to the Space Station Freedom Program," de Figueiredo said. "And the importance of the work, along with its posture on the cutting edge of robotics, will provide a strong motivation and a sense of real accomplishment for our students."

"We're trying to create one large lab," Adams added. "It's good for the schools, the students get to work on something that has a direct application, and it's good for us -- NASA gets the benefits of their work."

De Figueiredo chairs the consortium and is the project's principal investigator at Rice; Prof. Delbert Tesar is UT's prinicipal investigator; Prof. George Kondraske is UTA's principal investigator; and Prof. Richard Volz is A&M's principal investigator.

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NASA News

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For Release:

Jeffrey Carr
RELEASE NO. 90-036

July 3, 1990

ASTRONAUT CLASS OF 1990 REPORTS FOR DUTY
Media Reception Planned

Members of the astronaut candidate class of 1990 will report to the Johnson Space Center Monday, July 16, to begin a year of candidate training and evaluation. The 23 candidates were selected earlier this year from nearly 2000 qualified applicants.

Their first week on the job will consist primarily of orientation briefings and tours, in addition to physiological training which is prerequisite to T-38 flight training. The following several months will consist of intensive instruction in the fundamentals of aerodynamics, electronics, and computers, as well as in Shuttle systems and operations.

Candidates will also receive training in water and wilderness survival techniques, SCUBA, and will attend lectures on a variety of subjects ranging from space flight history to Shuttle applied sciences.

The group includes 7 pilot candidates and 16 mission specialist candidates. Of the 23 candidates, 11 are civilians and 12 are military officers. Among the 5 women selected, 3 are military officers, including the first woman to be named as a pilot candidate, and the first Hispanic woman to be selected.

A brief reception is planned for 1:00 p.m. CDT on the 16th to introduce the candidates to accredited news media. Photo opportunities and brief interviews will be accommodated as time permits. Media who are interested in attending should contact the JSC News Center at 713/483-5111.

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NASA News

National Aeronautics and Space Administration
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AC 713 483-5111

Billie Deason
Release No. 90-038

For Release:
July 17, 1990

APOLLO-SOYUZ TEST PROJECT REUNION TO BE HELD AT JSC

American and Soviet crewmembers of the Apollo-Soyuz Test Project (ASTP) will return to the Johnson Space Center on July 24 for a reunion observing the 15-year anniversary of their historic mission.

Astronauts Tom Stafford and Deke Slayton, both now retired, and Cosmonauts Alexei Leonov and Valery Kubasov will join in a tour of three NASA Centers to celebrate history's first international joint space mission. Astronaut Vance Brand, commander of upcoming Shuttle mission STS-35 and a member of the ASTP crew, will participate in the JSC events if schedules permit. Spouses and family members of the crew will take part in the reunion activities. The party will arrive the morning of July 24 at Ellington Field where Center Director Aaron Cohen will welcome them.

A press conference will be held at 10:45 a.m. in the JSC press briefing room, building 2, room 135. Following the press conference, the ASTP crews and their families will be guests of Stafford and Cohen for a luncheon at the Gilruth Center.

In the afternoon, the group will tour the Weightless Environment Training Facility, Mission Control, the Shuttle trainer and the Space Station Freedom full-scale mockups.

At 3:45 p.m., the party will return to the press briefing room for the signing of a letter of agreement between the Soviet Soyuz All-Union Aerospace Youth Society, acting on behalf of Gosteleradio (USSR television) and the producers of Houston Public Television's new PBS children's space science series, "The Spacewatch Club." The agreement finalizes arrangements for two television projects to be jointly produced by the Soyuz Society, Gosteleradio, PBS and Spacewatch.

Kubasov will sign for the Soyuz Society and James S. Miller, executive producer of "The Spacewatch Club" series, will sign for Houston Public Televsion.

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An evening reception sponsored by the Space Foundation will be held at the Lunar and Planetary Institute adjacent to Johnson Space Center. The group will depart Ellington Field the morning of July 25 for a reunion celebration at the Marshall Space Flight Center in Huntsville, Alabama.

The Apollo-Soyuz Test Project mission resulted from a 1972 agreement between the United States and the Soviet Union to work toward a common docking system for future spacecraft. The special docking module, compatible with both the Apollo and Soyuz spacecraft, was developed by the United States for use by both countries.

Both the Soyuz and Apollo spacecraft were launched on July 15, 1975. Apollo lifted off about 7½ hours after Soyuz. On its 17th orbit, Soyuz maneuvered to the planned docking orbit about 138 miles above Earth. The successful rendezvous and docking was completed on July 17, 1975, when the Apollo spacecraft gradually piloted toward the orbiting Soyuz.

During the following two days, the crews accomplished four transfer operations between the two spacecraft and completed five scheduled experiments. While the two spacecraft were docked, the crews provided television views of their activities, the interior of the two spacecraft and demonstrated various aspects of space operations.

The Soyuz landed on July 21, and Apollo landed July 24.

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NOTE TO EDITORS:

Still photography and video products documenting the ASTP mission are available through the JSC Media Services Branch. For still photography, call 713-483-4231; for video products, call 713-486-9606.

NASA News

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Mark Hess/Ed Campion
Headquarters, Washington, D.C.
(Phone: 202/453-8536)

For Release:
July 18, 1990
3:00 p.m. CDT

Don Haley
Ames-Dryden Flight Research Facility, Edwards, Calif.
(Phone: 805/258-8381)

Kyle Herring
Johnson Space Center, Houston
(Phone: 713/483-5111)

RELEASE: 90-100

SPACE SHUTTLE DRAG CHUTE TESTS SET TO BEGIN AT AMES-DRYDEN

Tests of a drag parachute system to improve the landing capabilities of Space Shuttle orbiters are expected to begin later this month at NASA's Ames-Dryden Flight Research Facility, Edwards, Calif.

The tests are part of NASA's continuing program to upgrade operational capabilities and flight safety of the Space Shuttle fleet.

Drag chutes are specially designed parachutes deployed from the aft end of an aircraft or aerospace vehicle to supplement the normal system of brakes and help slow the vehicle's speed after it has landed on a runway. Drag chutes on the orbiters will permit them to land safely in a shorter distance and also help reduce tire and brake wear.

The drag chute tests will be conducted on the same B-52 that Ames-Dryden uses as a "mothership" to take manned and unmanned aircraft to altitudes of up to 40,000 feet where they are air-launched and their research flights begin.

The orbiter drag chute is four feet smaller in diameter than the normal B-52 chute. For these tests, a modified orbiter drag chute compartment has been mounted on the B-52. This results in a difference in the load path of the parachute loads on the aircraft. To handle the new loads, NASA has strengthened the tail section of the B-52 where the drag chute deployment system is located.

- more -

Instrumentation will record loads at various locations in the attachment system and aft-facing cameras will film the deployment of the drag chute during the tests. Data obtained from the tests will be used to validate predicted loads for an operational orbiter.

Eight landing tests with the orbiter chute system are planned at Ames-Dryden with chute deployment at speeds ranging from 140 to 200 knots (160 to 230 mph). Orbiter landing speeds range from 180 to 225 knots (210 to 260 mph).

The B-52 is restricted to a top landing speed of 200 knots in the tests because of tire limitations.

Endeavour, the orbiter being built by Rockwell International, Palmdale, Calif., is expected to become the first Space Shuttle with a built-in drag chute deployment system when it is rolled out of the assembly plant next year. The system will be installed on the three orbiters now in use -- Discovery, Atlantis and Columbia -- as part of the program to continually upgrade and improve the reusable spacecraft.

Piloting the B-52 during the tests will be C. Gordon Fullerton, a former astronaut who flew on two Space Shuttle missions. Fullerton, now a research pilot at Ames-Dryden, was also a member of the NASA flight crews that carried out the Space Shuttle approach and landing tests at Ames-Dryden in 1977 with the prototype orbiter Enterprise.

The NASA B-52 test aircraft, built in 1952, is the oldest B-52 in flying status and also the oldest research aircraft flown by NASA. It was used as the launch aircraft on most of the X-15 research flights in the 1960s and lifting body missions in the 1970s and early 1980s. It was most recently the launch aircraft for the first successful test of the commercially developed Pegasus air-launched space booster.

The orbiter drag chute test program is managed by NASA's Johnson Space Center, Houston. Also participating in the program are Rockwell International, which designed the orbiter drag chute system; Irvin Industries, Santa Ana, Calif., which designed the parachute; and the Boeing Airplane Co., Seattle, which designed the modifications to the B-52 test aircraft.

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NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
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James Hartsfield
Release No.: 90-039

July 31, 1990

SPACE STATION NEUTRAL BUOYANCY LAB CONSTRUCTION SET FOR DECEMBER

It will weigh more than 1 billion pounds, have walls of 12-foot thick concrete, an eight-foot thick bottom, and it will make its inhabitants feel lighter than a feather.

Workers will begin digging a 400,000 cubic-foot hole on the grounds of the Johnson Space Center in December as they start construction of the new Neutral Buoyancy Laboratory (NBL), a facility that may be as crucial to the success of Space Station Freedom as the launch pad.

"The only way that we can see that you can prove you can assemble Space Station Freedom in orbit," said Vern Hammersley, chief of the Man-Systems Division's Facilities Operations Branch, "is to do it in the water first."

Simulating weightlessness on Earth in enough quantity to practice assembling Freedom, or even a few parts of Freedom, means thinking big. And the NBL is a lesson in large, said Bill Roeh, the facility's project manager from the Facility Development Division.

The pool will be 60 feet deep, 135 feet wide and 235 feet long. The building that will surround it could hold a football field sans one end zone, and its ceiling will reach almost as high as nine-story Bldg. 1, with a 10-ton crane that can traverse its length.

"The size has been the challenge," Roeh said. "Our design team has really enjoyed working on all the unusual aspects of it. It's been a set of new frontiers and has expanded their engineering skills."

The NBL is the first building at JSC designed specifically as a neutral buoyancy facility. All past such pools, including the current Weightless Environment Training Facility (WETF), have been housed in hand-me-down buildings modified to accept them.

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First, there was the Water Immersion Facility (WIF) installed in Bldg. 5 in 1966. Next, the WIF was moved to Bldg. 260, occupying a tank previously used to practice splashdowns and recoveries at sea. Then, in 1980, the WETF was born in Bldg. 29, a building that had previously held a centrifuge.

The NBL will be completed in June 1993. And it will be a first-of-a-kind.

Due to its 60-foot depth, astronauts will have to decompress following a training session. They will enter the pool from the surface to begin training, but they will leave through an underwater door in the side of the pool, 30 feet down. The door will lead to a more than three stories tall, 26-foot diameter, solid stainless steel exit chamber, half-filled with water and half-filled with a compressed atmosphere. Astronauts will exit the water there, doff their suits and then move through a common air lock to either of two decompression chambers, both capable of being used as medical facilities or as decompression and debriefing areas.

The decompression chambers are designed to take subjects to a pressure equal to 160 feet underwater, a requirement for treatment of decompression sickness, commonly called "the bends."

"The exit chamber permits us to decompress suited crewmen in their shirt sleeves," Hammersley said. "Without it, they would have to make long decompression stops at certain depths on the way up."

Scuba divers won't have to decompress; they will be rotated once an hour. And they'll breathe nitrox, a compressed air mixture consisting of about 40 percent oxygen, 60 percent nitrogen, instead of the standard 20 percent oxygen, 80 percent nitrogen compressed air in scuba tanks. The oxygen-rich nitrox will provide an additional safeguard against decompression sickness that can be caused by frequent deep dives.

The pool will be heated to 84 degrees, the optimum temperature for diving safety. Each of the 14 million gallons of water it holds will be filtered once every 24 hours, at a rate of 10,000 gallons per minute through filters that remove particles smaller than human red blood cells. A slower, 1,000 gallon-per-minute bank of filters will continually "polish" the water, removing particles as small as those that make up smoke.

To build the NBL, thirty-three 85-foot deep wells will be drilled around the perimeter of the building site, draining the water table to a depth of 40 feet at the location. The pool will be built 30 feet below ground, 30 feet above ground.

Due to the weight of water as the pool is filled, its sides and bottom are designed to flex as the structure settles. The pool may settle as much as two inches. The sides may bow outward as much as a half a foot each.

The pool is designed to flex, but the building surrounding it is not. So special connections and expansion joints have been designed in attachments between the two to allow for the pool's movement. Also, two viewing windows will be in the side of the pool, 15 feet down.

An aircraft carrier-type cutaway in the deck of the pool will allow mockups to be hoisted from a storage area below the floor to the deck. Four small cranes will be located along the edges of the pool to lower astronauts or objects into the water.

The NBL is designed to allow multiple training activities to be done at once. For example, a shuttle crew and a Freedom crew can train underwater at different spots in the pool simultaneously.

A 32,000 square-foot wing on the building will house offices, mechanical equipment, changing areas and technical support areas. A future wing on the opposite side of the building is designed to accommodate a balcony viewing area 15 feet above the pool's deck.

The NBL will be built at the corner of Avenue B and 2nd Street, and is projected to cost from $30 million to $40 million. An invitation for bids on the project is scheduled for September, Roeh said. A contract will be awarded in December, with groundbreaking following soon after. After the NBL is finished and operational, the WETF will remain in a standby mode for one year. After that, its future is uncertain.

"The most exciting time for me will be when they're pouring the concrete for the pool bottom and walls," Roeh said. "And it will also be the most critical."

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NASA photos available to illustrate this release include S90-38712; S89-20030; S90-44689; and S90-44690. They may be obtained by contacting the JSC Still Photo Library at (713) 483-4231.

NASA News

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For Release:
August 6, 1990
3 P.M. CDT

RELEASE: 90-108

NASA SELECTS MICROGRAVITY MISSION PAYLOAD SPECIALIST CANDIDATES

NASA today announced the selection of four candidates for two payload specialist positions for Space Shuttle STS-53 mission scheduled to carry the U. S. Microgravity Laboratory - 1 (USML-1) in March 1992.

Selected for mission training were: Lawrence J. DeLucas, O.D., Ph.D.; Joseph Prahl, Ph.D., Albert Sacco, Jr., Ph.D. and Eugene H. Trinh, Ph.D. Two of the candidates will be selected for flight in March 1991, and the others will serve as alternates.

DeLucas, 40, earned a doctorate in optometry in 1981 and a Ph.D. in biochemistry in 1982 from the University of Alabama at Birmingham. He holds several positions at the University of Alabama at Birmingham including: Associate Director, Center for Macromolecular Crystallography; Professor, Department of Optometry; and Adjunct Professor, Laboratory of Medical Genetics. He resides in Birmingham.

Prahl earned a Ph.D. in engineering from Harvard University in 1968. The 47-year-old Prahl is a professor of engineering at Case Western Reserve University, Cleveland. He resides in East Cleveland.

Sacco, 41, earned a Ph.D. in chemical engineering from the Massachusetts Institute of Technology in 1977. He is a professor and head of the Department of Chemical Engineering at Worcester Polytechnic Institute, Worcester, Mass. He resides in Holden, Mass.

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Trinh, of Culver City, Calif., earned a Ph.D. degree in applied physics from Yale in 1978. He is a scientist at the Jet Propulsion Laboratory, Pasadena, Calif. The 40-year-old Trinh was previously an alternate payload specialist for the Spacelab 3 mission.

During the 13-day USML-1 mission, the payload specialists will conduct more than 30 scientific and technological investigations in materials, fluids and biological processes in the spacelab environment.

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Lyndon B. Johnson Space Center
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For Release:

Barbara Schwartz
Release No. 90-042

August 29, 1990
12 noon CDT

ASTRONAUT MCCULLEY TO RETIRE FROM THE NAVY AND LEAVE NASA

Astronaut Michael J. McCulley (Captain, USN) is retiring from the Navy and leaving NASA in early October after the STS-41 Ulysses launch.

McCulley has accepted the position of Vice President and Deputy Director, KSC - Launch Site, with Lockheed Space Operations Company. "I am not changing teams with this move, only my position on the team," McCulley said. McCulley will be heavily involved in the day-to-day processing of Space Shuttle vehicles in his new position.

McCulley was the pilot on mission STS-34 during which the crew successfully deployed the Galileo spacecraft for its journey to explore Jupiter. Selected by NASA in May 1984, McCulley has served as the Astronaut Office weather coordinator, the flight crew representative to the Shuttle Program Requirements Control Board, Technical Assistant to the Director of Flight Crew Operations, and currently, as lead of the Astronaut Support Team at the Kennedy Space Center.

Regarding McCulley's decision to retire, Director of Flight Crew Operations Donald R. Puddy said, "Mike has always been a top-notch performer in every way. Both as a pilot and as a technical expert, he has made significant contributions to the Shuttle Program and to my office. We will miss him here at JSC, but his experience and expertise will be extremely valuable in his new position."

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NASA News
National Aeronautics and Space Administration
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For Release:

Kari Fluegel November 29, 1990
Release No. 90-057

NEW TREATMENT EASES EFFECTS OF SPACE MOTION SICKNESS

Physicians at NASA's Johnson Space Center (JSC), Houston, have instituted a new treatment for space motion sickness that has markedly decreased the severity of the illness in crewmembers.

Promethezine, an intramuscular treatment administered after the onset of symptoms, has helped decrease the symptoms of space motion sickness on 14 occasions since NASA's return to flight in September 1988, according to Dr. Sam Pool, Chief of the Medical Sciences Division at JSC.

Medical researchers believe changes in the body's vestibular system contribute significantly to space motion sickness. The vestibular system regulates the body's sense of balance and, when the tiny stones in the inner ear called otoliths no longer have weight in a microgravity environment, the brain may misinterpret the sensations an individual may feel while moving around in microgravity. The unusual visual cues experienced during floating in the Shuttle orbiter cabin may further confuse the brain's perceptions and produce symptoms.

Since the early days of space flight, many space travelers have experienced this space motion sickness. Symptoms resemble those of Earth-based motion sickness and may include headache, malaise, lethargy, stomach awareness, loss of appetite, nausea and/or episodic vomiting. Symptoms tend to worsen during body movement, especially movements of the head.

In the first 24 missions of the Space Shuttle program, about 67 percent of the 85 crew members making their first flight reported symptoms of space motion sickness. About 30 percent reported mild symptoms; 24 percent, moderate symptoms; and 13 percent severe symptoms. Most recovered by the end of the third day in space. In one extreme case in the Soviet Salyut 6 mission, however, one crewmember was ill for 14 days. The incidence of space motion sickness among those making a second flight dropped to 46 percent.

During the first 24 Shuttle missions, scopolamine and a combination of scopolamine and dextroamphetamine, given orally, were used to treat space motion sickness. Recent studies at the JSC Biomedical Operations and Research Branch by Drs. Nitza Cintron and Lakshmi Putcha, however, have shown that the oral absorption of scopolamine and other medications in weightlessness is unpredictable.

Since the initiation of intramuscular promethazine therapy, Shuttle crewmembers have not experienced severe cases of space motion sickness and almost all have been essentially symptom free by the end of the second flight day. Crewmembers now receive training in administering the medication should space motion sickness develop during Shuttle flights. Research for space motion sickness is sponsored by NASA's Office of Space Science and Applications.

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For Release:

IMMEDIATE

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NASA OFFICIALS DENY REPORTS OF PHONE MISUSE

NASA Johnson Space Center officials today categorically denied recent news reports of large-scale unauthorized use of long distance phone service at the center.

The Houston Chronicle incorrectly reported Wednesday that hackers accessing federal long distance phone lines had stolen up to $12 million dollars worth of service over a two-year period.

Space Center officials issued a statement Wednesday that, given that the entire long distance bill for nearly 10,000 federal employees and contractors runs under $3 million each year, the Chronicle's assertion could not possibly be correct.

Acting on an inquiry from the Chronicle on November 16, the center shut down an off-site access link to federal long distance service. It was also discovered that an access number to that link had been published on a "hackers' bulletin board."

There has been no appreciable change in Federal Telecommunications Service (FTS) call statistics from the space center nor indication of significant abuse over the last several years. Any abuse at a level even much smaller than that asserted in the Chronicle article would have been impossible to miss and would have been investigated.

"While unauthorized use of the telephone undoubtedly occurs, as is likely on any large commercial or government system, we are confident it is a small percentage of total telephone costs," said John Garman, Deputy Director of Information Systems at JSC.

# # #

December 5, 1990

NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
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For Release:
December 5, 1990

Mark Hess
Headquarters, Washington, D.C.
(Phone: 202/453-4164)

RELEASE: 90-158

NASA RELEASES DECEMBER 1990 MIXED FLEET MANIFEST

NASA today issued a December 1990 Mixed Fleet Manifest for both the Space Shuttle and expendable launch vehicles (ELV). Of the 27 Space Shuttle flights planned over the next 3 years, 19 missions will be for NASA payloads or joint NASA/international payloads with the Shuttle focusing on the performance of a variety of space science activities supporting life sciences, materials science and astrophysics investigations.

The remainder of the flights during that time frame will support 2 international Spacelab missions, 2 flights of the commercially-provided Spacehab module and the retrieval and reboost of a stranded commercial communications satellite. On a calendar year basis, there are 7 Space Shuttle launches planned in 1991, 8 in 1992 and 12 in 1993.

The Mixed Fleet Manifest shows 13 launches of expendable vehicles over the next 3 years; 3 launches in the small vehicle class, 7 in the medium category and 3 in the intermediate class. Among the NASA payloads planned for launch on ELVs are the Extreme Ultraviolet Explorer and Geotail on Delta II vehicles in August 1991 and July 1992, respectively, and the Mars Observer on a Titan III in September 1992.

NASA plans 7 Space Shuttle launches in 1991, the first being STS-39 which is an unclassified, dedicated Defense Department mission carrying payloads belonging to the Air Force and the Stategic Defense Initiative Organization. NASA's Gamma Ray Observatory is planned for launch in April and the first Spacelab Life Sciences mission is planned in May. Following that flight, Columbia will be returned to the Rockwell International facility in Palmdale, Calif., for an extensive inspection and modification period during which changes will be made to accommodate the extended duration orbiter pallet.

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The final 4 flights for 1991 are to carry the following primary payloads, respectively: the fifth Tracking and Data Relay Satellite (July); a DOD Defense Support Program (DSP) satellite (August); NASA's Upper Atmospheric Research Satellite (November) and the first International Microgravity Laboratory Spacelab mission (December).

Space Shuttle highlights in 1992 will include the first flight of a new space-age tool, called the Tethered Satellite System (TSS)-1, a joint U.S./Italian project. The European Space Agency's European Retrievable Carrier (EURECA) also will be deployed. An Italian Payload Specialist and Mission Specialist Claude Nicollier of Switzerland will both fly for the first time on this mission. The first Japanese Payload Specialist to fly with NASA, Dr. Mamoru Mohri, will be on the Spacelab-J mission in September.

Also making its debut in 1992 will be the orbiter Endeavour. On its maiden flight, STS-49, astronauts will attach a new perigee kick motor to a stranded INTELSAT communications satellite which failed to reach its proper orbit after launch on a Titan rocket earlier this year. Columbia will return to flight status in mid 1992 carrying the first U.S. Microgravity Laboratory.

A major milestone in the 1993 launch year is the first revisit to the Hubble Space Telescope, planned for STS-60 during the summer.

Throughout this 3-year period a variety of activities in support of Space Station Freedom development will be performed. These include a demonstration test flight for the Flight Telerobotic Servicer, two flights with planned space walks to test planned Space Station equipment and techniques, two zero-gravity thermal system tests and two tests of environmental control system concepts.

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For Release:

Barbara Schwartz
Release No. 90-060

December 12, 1990

SPRINGER RETIRES FROM NASA, MARINE CORPS

Col. Robert C. Springer, selected as an astronaut in 1980 and a mission specialist on two shuttle flights has retired from NASA and the U.S. Marine Corps.

Springer announced he will work for Boeing Aerospace and Electronics Division in Huntsville, Ala. as the manager of the Space Station Freedom's element integration.

During his first space flight, STS-29 in March 1989, Springer and his crewmates deployed a Tracking and Data Relay Satellite, and performed numerous secondary experiments, including a Space Station "heat pipe" radiator experiment, two student experiments, a protein crystal growth experiment, and a chromosome and plant cell division experiment. Additionally, the crew took more than 4,000 photographs of the earth using several types of cameras, including the IMAX 70 mm movie camera.

Springer also flew on STS-38, a Department of Defense flight, which launched Nov. 15, 1990.

Springer's technical assignments have included serving as a member of the support crew for STS-3, concept development studies for the Space Operations Center, and the coordination of various aspects of the final development of the Remote Manipulator System for operational use. He also worked in the Mission Control Center as spacecraft communicator (CAPCOM) for seven flights in 1984 and 1985.

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For Release
December 12, 1990

Barbara Schwartz
Release No. 90-061

NOTE TO EDITORS: STS-35 POSTFLIGHT CREW PRESS CONFERENCE

The STS-35 Postflight Crew Press Conference will be held at Johnson Space Center, Building 2, Room 135, on Thursday, December 20, at 1 p.m. central time. Crew members will narrate slides and film from their recent Astro-1 mission, followed by a question and answer session.

News media are invited to participate on location at JSC or by two-way audio from NASA Headquarters in Washington, DC; Kennedy Space Center in Florida; or Marshall Space Flight Center, in Huntsville, Alabama.

The briefing will be carried live on NASA Select television, Satcom F2R, Transponder 13, C-band, at 72° West Longitude, Frequency 3960.0 MHz, Audio 6.8 MHz.

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For Release:

David W. Garrett
Headquarters, Washington, D.C.
(Phone: 202/453-8400)

December 17, 1990

RELEASE: 90-160

NASA HIGHLIGHTS OF 1990

The year 1990 for NASA was filled with major scientific achievements and several disappointments.

In April, the Hubble Space Telescope (HST) was successfully deployed from the Shuttle Discovery. Several weeks later, the telescope's large mirror was found to have a spherical abberration which would prevent certain visible light observations. However, the HST has begun unprecendented scientific work in spectroscopy, photometry, astrometry and ultraviolet wavelength imaging not possible from the ground. And by using computer image processing, several visible light observations have been made of Orion's nebula and a giant storm on Saturn.

The Magellan spacecraft began detailed radar mapping of the planet Venus in August; the European Space Agency's Ulysses spacecraft, launched in October by the Space Shuttle, is on its way to study the poles of the Sun; and the Galileo spacecraft, launched last year, made its first of 2 gravitational assist passes by Earth in its journey to the planet Jupiter.

NASA Administrator Richard H. Truly launched an effort to collect the best ideas on how to return to the Moon and go on to Mars. Former astronaut Tom Stafford was named to head the group which will analyze the ideas and report to Truly in February.

Despite a stand-down of 5 months due to hydrogen leaks, 6 successful Shuttle missions were flown. Two dedicated Department of Defense paylods, deployment of the SYNCOM IV communications satellite and the Long Duration Exposure Facility retrieval, the Hubble and Ulysses deployments and the Astro-1 astronomy mission comprised the 1990 manifest.

In December, the Advisory Committee on the Future of the U.S. Space Program (the Augustine Committee) issued its final report recommending that primary emphasis be placed on science; obtaining exclusions for a portion of NASA's employees from civil service rules; redesigning Space Station Freedom; a mission from planet Earth to complement the mission to planet Earth; and reducing dependence on the Space Shuttle by developing a new unmanned heavy-lift launch vehicle.

END GENERAL RELEASE
BACKGROUND INFORMATION FOLLOWS

- more -

OFFICE OF SPACE SCIENCE AND APPLICATIONS

For NASA's Office of Space Science and Applications, 1990 was a very successful year, punctuated by substantial challenges. The space science programs initiated this year, despite some setbacks, will continue to expand and provide scientists with rich returns of data that scientists will be studying well into the next century.

The Hubble Space Telescope (HST) epitomized 1990's highs and lows before finishing the year on an optimistic note. After years of anticipation, HST was launched aboard the Space Shuttle Discovery in April. By orbiting above the Earth's atmosphere which distorts astronomers' observations, Hubble would see more clearly than any other telescope ever had, gathering data on the beginning of the universe. Its very first optical-engineering test returned a valuable science observation, resolving the star cluster 30 Doradus three to four times better than the best ground-based observation.

The elation over Hubble was deflated by the discovery in June that the telescope's optical system is affected by a spherical aberration, a misshaping of the primary mirror that prevents the telescope from focusing light to a single, precise point. As a result, the telescope cannot see very faint objects or distinguish faint objects in a crowded field.

Dr. Lennard A. Fisk, Associate Administrator for Space Science and Applications, appointed a review board chaired by Dr. Lew Allen, former Director of the Jet Propulsion Laboratory, to investigate how the aberration had occurred and why it had not been detected before launch. After 5 months, the Board concluded that a key device used to test the shape of the primary mirror had been assembled incorrectly. As a result, the mirror was improperly ground by 2 to 3 microns (thousandths of a millimeter) at its edge.

The Board's report faulted the contractor, Perkin-Elmer (now Hughes Danbury Optical Systems) and NASA for quality-control practices that allowed the error to remain uncorrected. The Board also concluded that mechanisms are in place to prevent similar problems from affecting future systems such as the Advanced X-Ray Astrophysics Facility.

Spherical aberration notwithstanding, Hubble is proving itself an exemplary observatory, still capable of seeing objects in visible light much more clearly than ground-based telescopes and making extraordinary observations in the ultraviolet wavelengths, which are blocked from the surface by the Earth's atmosphere.

The Wide Field/Planetary Camera (WFPC) observed a jet of material streaming away from the Orion Nebula with unprecedented clarity, offering insights into this region of young stars. The

Faint Object Camera, built by the European Space Agency, returned the clearest image yet of Pluto, and its moon, Charon. Most dramatically, the WFPC took several hundred pictures as the white spots on Saturn grew into an immense storm that spread around the planet's equator.

The discovery of the spherical aberration gave new emphasis to the previously planned HST servicing mission in 1993, when astronauts will replace the WFPC with its backup unit, WFPC-2, which will be modified to compensate for the spherical aberration. Once that is accomplished, NASA astronomers are confident HST will accomplish most of its major scientific objectives.

Another NASA astrophysics project, the Cosmic Background Explorer (COBE), completed its survey of the entire sky in infrared and microwave radiation and made unprecedented measurements of background radiation that support the Big Bang theory of the origin of the Universe. In April, COBE sent back to Earth a clear infrared view of the center of the galaxy, which is usually obscured from view in visible light by interstellar dust.

In December, astronomers used three ultraviolet telescopes and the Broad-Band X-Ray Telescope in the ASTRO-1 payload aboard the Space Shuttle Columbia to study the high-energy Universe. They made 394 observations of 135 objects, including Jupiter and its moon Io, a comet, exploding stars, galaxies and quasars. ASTRO-1 also marked the return to flight of the Spacelab payload systems, which last flew in 1985.

By the end of the year, NASA's 1989 planetary missions, Magellan and Galileo, were returning data, and the Ulysses spacecraft had been launched toward the Sun.

After Magellan's controllers worked through some early technical problems, the spacecraft returned radar images of Venus that showed geological features unlike anything seen on Earth. One area sported what scientists called crater farms; another was covered by a checkered pattern of closely spaced fault lines running at right angles. Most intriguing were indications that Venus still may be geologically active, though much less so than Earth. Scientists hope to map the entire surface of Venus and observe evidence of a volcanic eruption during Magellan's mission, which will continue into 1991.

Galileo flew by Venus in February, conducting the first infrared imagery and spectroscopy below the planet's cloud deck. In December, Galileo used the Earth's gravity to pick up speed on its way to its ultimate rendezvous with Jupiter in 1995. In October, the Space Shuttle Discovery launched Ulysses on its mission to study the Sun's polar regions, areas that never had been studied closely.

Planetary missions from the past continued to make news in 1990 on their way into deep space. Voyager 1 turned its camera toward the Sun and took a family portrait of six of the nine planets, the first time such a perspective had ever been seen. Pioneer 11 left the solar system for interstellar space, while Pioneer 10 set an unworldly distance record by passing the 50 astronomical-unit milestone, 4.6 billion miles from Earth.

NASA explored the space closer to Earth in 1990 as well. July saw the launch of the Combined Release and Radiation Effects Satellite (CRRES), which uses chemical releases to study the Earth's magnetic fields and the plasmas, or ionized gases, that travel through them. A sounding-rocket campaign in the South Pacific made sub-orbital studies in conjunction with the CRRES satellite. Releases from a similar mission, PEGSAT, were seen in the spring over parts of Northern Canada.

The agency also expanded its commitment to study the Earth, receiving approval from Congress to begin the Earth Observing System, a series of satellites that will use the perspective from space to observe the Earth as a global environmental system beginning in 1998. More immediately, NASA scientists analyzed global temperatures from the 1980s to offer insights into potential global warming. Though no net trend could be seen within the last decade, observations indicated that the 1980s were warmer than the 1970s.

Ozone depletion studies, an ongoing program within NASA, showed that the 1990 ozone hole over Antarctica opened as rapidly and covered as wide an area as the record 1987 hole. Papers stemming from a 1989 airborne expedition co-sponsored by NASA showed that local areas of ozone depletion also had been observed over the Arctic. In October, the Space Shuttle flew the Shuttle Solar Backscatter Ultraviolet instrument used to calibrate other ozone-detection instruments. To continue global ozone monitoring through the end of the decade, NASA agreed with the Soviet Union to place a Total Ozone Mapping Spectrometer aboard a Soviet Meteor satellite in 1991.

U.S.-Soviet cooperation extended into the life sciences as well as the two nations exchanged biomedical data from 1989 space flights at a September meeting. In addition, specialists from both countries began to analyze data obtained from short- and long-duration missions dealing with bone, muscle and

Space science research extended into other areas as well. Space Shuttle middeck payloads included experiments to investigate how protein crystals and how flames spread in the absence of the Earth's gravity. NASA aircraft took measurements that ultimately will be used to build instruments to study global winds and tropical rainfall and studied the chemistry of the lower atmosphere over Canada. Balloon flights observed atmospheric processes and tested balloon designs. In all, NASA conducted approximately 30 suborbital rocket flights and 25 balloon flights in support of space science.

OFFICE OF SPACE FLIGHT

Space Station

A 1991 fiscal year budget shortfall of more than $550 million, along with a Congressional mandate to significantly reduce out-year spending, prompted NASA to begin a 3-month assessment of the Space Station Freedom program. This action will be worked within the existing program structure.

"We will conduct a 3-month assessment to determine what deletions or deferrals in content and what adjustments in schedule will be necessary," said Richard H. Kohrs, Director, Space Station Freedom.

Recommendations on the restructuring of the Freedom program are planned to be forwarded to Space Flight Associate Administrator Dr. William B. Lenoir and NASA Administrator Richard H. Truly about the end of January. Ground rules given to the program to aid in this assessment were developed from Congressional language in NASA's FY 1991 Appropriations Bill.

Congress told NASA to expect no more than 8 to 10 percent growth over the next 5 years (FY 1992-1996), with peak spending for Freedom not to exceed $2.5-2.6 billion. The budgetary ground rules, including the cut for FY 1991, represent a $5.7 billion shortfall from what NASA had planned to spend for Freedom over that same time period.

Other ground rules to be followed in conducting the restructuring include: developing a phased approach with quasi-independent phases; protect life and materials science; maintain international capability; limit assembly flights to no more than four annually; and achieve first element launch, man-tended capability and permanently manned capability as early as possible. At least one option will be developed which holds first element launch at its current date of March 1995.

The Freedom program is on track to complete a major milestone in 1990, the Integrated System Preliminary Design Review. The review is the culmination of the preliminary design reviews completed by all the NASA centers and their prime contractors with responsibility for Freedom hardware. In all, over 80 separate design reviews were conducted over the course of the year focusing on a review of the preliminary design of nearly every major component, subsystem and system which together comprise the space station -- from Freedom's laboratory module to its data management system to the photovoltaic arrays which furnish power to the station.

The integrated systems preliminary design review is a comprehensive review of Freedom's preliminary design. Program officials review the design to make sure it meets requirements for safety and operational adequacy, physical and functional relationship and that the design can be built, integrated and successfully checked out.

While the restructuring will have an impact on the design, program officials expect to use the results of the integrated systems preliminary design review as a baseline for design changes. "We do not want to walk away from the time and resources invested in this program to date," said Kohrs, "and I expect we will be able to use the configuration that comes out of this review as a solid baseline to work from during the restructuring study."

The Freedom program came to grips with several major resource issues in 1990, including the successful reduction of weight and power increases that surfaced from the various preliminary design reviews. Preliminary figures for Freedom's weight as of June 1990 were 143,000 pounds higher than the allocated limit of 512,000 pounds for the total space station, and housekeeping power exceeded the maximum 45 kw available by nearly 15 kw. An intensive summer-long resources scrub reduced weight estimates by 130,000 pounds and reduced the housekeeping power by 13 kw. Users will receive 30 kw of power to conduct their experiments.

Another issue resolved during FY 1990 was the extra vehicular activity maintenance estimates to repair, replace and maintain Freedom's external hardware. A detailed 7-month long assessment by Johnson Space Center's Dr. William F. Fisher and Charles R. Price, co-chairman of the External Maintenance Task Team, showed that external maintenance would total about 3200 hours of EVA if nothing were done to change current plans. However, they estimated that annual EVA hours could be brought down to a manageable 500 hours if NASA followed their recommendations. A "Solutions Team" headed by JSC's William E.

Simon arrived at similar conclusions, indicating annual EVA man-hours per year could be reduced from about 3500 hours to about 485 hours annually by implementing their solutions.

Management of the polar platform was transferred to the Office of Space Science and Applications in 1990. OSSA has responsibility for the Earth Observing System, and the space station platform was to be the first in a series of polar-orbiting spacecraft to be developed for the EOS program. The move was accomplished to put the development and operation of the platform closer to the scientists who would use it.

Also in 1990, a new Chief Scientist was named for the Freedom program, Dr. William W. L. Taylor, of TRW. Taylor serves as the principal advocate for the space science community in the space station program.

Space Shuttle

1991 proved to be a year filled with significant accomplishments for the Space Shuttle with six successful missions being flown, an unexpected challenge as a troublesome hydrogen leak temporarily grounded the orbiters Columbia and Atlantis and a major milestone for the new Space Shuttle Endeavour as it was powered on for the first time.

Current capabilities of the Shuttle system were expanded during the year with two extended duration missions flown by Shuttle Columbia on missions STS-32 in January and STS-35 in December. The STS-32 mission set a new record as the longest Shuttle mission ever flown with 261 hours logged. The Shuttle Discovery carried two long awaited payloads into orbit on missions STS-31 in April which deployed the Hubble Space Telescope and STS-41 in October which deployed the Ulysses spacecraft. Atlantis also made two flights during the year for the Department of Defense on missions STS-36 in February and STS-38 in November.

Shuttle launches were interrupted for 5 months after hydrogen leaks were detected on Columbia and Atlantis during external tank loading operations. The problem on Atlantis was isolated to the seals associated with the 17-inch disconnect area. After replacing the disconnect, Atlantis passed a tanking test and returned to flight in November.

Shuttle Columbia also suffered from a leak in the 17-inch disconnect area which was replaced, but a separate leak in the main propulsion system remained elusive. A special leak team headed by Robert Schwinghammer of MSFC isolated the problem to a seal in a prevalve of the main propulsion system which had been damaged during installation after Columiba's January mission. A tanking test on Oct. 30 verified that all problems with Columbia had been resolved and the final Shuttle mission of 1990 was flown by Columbia, Dec. 2-10.

With a NASA eye to the future of the Space Shuttle system, the University Corporation for Atmospheric Research (UCAR), Boulder, Colo., and Global Outpost, Inc., Alexandria, Va., signed agreements with NASA to explore the feasibility of using Shuttle external tanks as research, storage or manufacturing facilities in low-Earth orbit.

On May 11, the Marshall Space Flight Center awarded a 5 year contract to Lockheed Missiles & Space Co. for the design development, test and evaluation of the Space Shuttle Advanced Solid Rocket Motor. NASA and Rockwell International signed a memorandum of agreement in April for a cryogenic pallet which will allow Shuttle missions of up to 16 days in duration. In late July, tests of a drag chute system to improve the landing capabilities of the Space Shuttle began at Ames-Dryden Flight Research Facility.

There were many changes in the astronaut corps in 1991. In what will become standard biennial selections, 23 new astronauts candidates, including the first woman to be named as a pilot candidate and the first Hispanic woman to be chosen, were named and reported for training at Johnson Space Center in July. Five veteran astronauts, Bruce McCandless (STS 41-B, STS-31), Michael J. McCulley (STS-34), Donald E. Williams (STS 51-D, STS-34), Richard M. Mullane (STS 41-D, STS-27) and Robert C. Springer (STS-29, STS-38) retired from the agency.

o March 27: An agreement was signed with General Dynamics to provide Atlas IIAS launch services for the 1995 joint NASA/ESA Solar and Heliospheric Observatory mission.

o May 9: Scout/Multiple Access Communications Satellite was launched for DoD.

o May 11: Contract awarded to Lockheed Missiles and Space Co. for design, development, test and evaluation of the Space Shuttle Advanced Solid Rocket Motor (ASRM). A companion contract was awarded to Lockheed on May 25 for the design and construction of ASRM facilities.

o June 1: Delta II launched the joint NASA/Germany Roentgen Satellite.

o June 7: NASA announced termination of its Orbital Maneuvering Vehicle program.

o June 13: The Board of Governors of Intelsat approved a Space Shuttle rescue mission for the stranded INTELSAT VI satellite.

o July 3: Umbrella agreement signed with Orbital Sciences Corporation in support of the company's Pegasus and Taurus commercial launch vehicle programs.

o July 25: Atlas I (Atlas/Centaur-69) launched the Combined Release and Radiation Effects Satellite.

o Aug. 22: A government/industry board selected the type of rocket engine which will be designed to power the NASA/USAF Advanced Launch System.

OFFICE OF COMMERCIAL PROGRAMS

NASA initiated a new method of outreach to American business by sponsoring "Technology 2000," the first industrial exposition and conference to showcase the transfer of NASA technology to the private sector. Aimed primarily at non-aerospace business, Technology 2000 attracted more than 2,400 people and featured presentations by NASA and industry leaders who addressed prior and potential spinoffs of the agency's research.

To support its increasing commercial payload flight requirements, OCP is sponsoring the development of the Commercial Experiment Transporter (COMET), a system for launching and recovering commercial spaceborne experiments. Carried aloft by an expendable launch vehicle, the COMET free-flyer will contain both a service module and a recovery system. The two components will separate prior to reentering the atmosphere so that others not requiring retrieval, can continue their mission aboard the service module. Current plans call for a mid-1991 launch of the new system into an equatorial orbit.

Additionally, to expand private sector experiment capability aboard the Space Shuttle, NASA awarded a contract to Spacehab, Inc., Washington, D.C., for a Commercial Middeck Augmentation Module. This commercially-developed and owned module will ride in the Shuttle cargo bay, be accessible through the airlock and will add the volume equivalent of about 50 middeck lockers to the orbiters' capacity.

Commercial space flight activity in 1990 included six middeck experiments carried on the Space Shuttle, as well as the launch of Consort 3 aboard a Starfire sounding rocket from White Sands Missile Range, N.M., on May 16. The half-ton Consort payload was carried to an altitude of 200 miles and provided approximately 7 minutes of microgravity for 12 experiments developed by a consortium of NASA Centers for the Commercial Development of Space (CCDS). The flight was the third in the continuing sounding rocket program managed by the Consortium for Materials Development in Space, a CCDS located at the University of Alabama-Huntsville.

Commercial experiments flown aboard the Shuttle in 1990 include:

o Protein crystal Growth (PCG), an experiment package provided by the NASA-sponsored Center for Macromolecular Crystallography (CMC) located at the University of Alabama-Birmingham, carried aboard STS-32 in January.

o Fluids Experiment Apparatus (FEA), a modular, microgravity chemistry and physics laboratory, flown on STS-32 under a NASA-Rockwell International Corp. joint endeavor in the field of floating zone crystal growth and purification research. The FEA included a Microgravity Disturbances Experiment designed to quantify how orbiter and crew-induced disturbances affect sensitive microgravity experiments.

o The PCG payload was flown again on STS-31 in April for CMC. Researchers reported that this flight experiment resulted in more high-quality crystals, including some of the largest ever grown.

o The STS-31 mission also carried the Investigations into Polymer Membrane Processing (IPMP) developed by the Battelle

Advanced Materials Center, Columbus, Ohio. Polymer membranes are used in the separations industry for desalination, filtering drugs and serums, atmospheric purification, electrolyses and dialysis. Post-flight analysis revealed major structural differences from ground-processed membranes.

o Physiological Systems Experiment on STS-41 in October, flown for the Center for Cell Research at Pennsylvania State University and its industry affiliate, Genentech, Inc., to investigate whether microgravity-induced conditions mimick medical problems on Earth.

o Also carried aboard the STS-41 mission was the second flight of the Battelle IPMP experiment to study polymer membrane casting in a convection-free environment.

Other key commercial program activities included:

o Establishment of a Space Commerce Steering Group composed of senior NASA officials. This group, chaired by NASA Deputy Administrator James R. Thompson Jr., will provide a high-level overview of commercial applications of space technology.

o An agreement between NASA and Orbital Sciences Corp., Fairfax, Va., in support of the firm's Pegasus and Taurus commercial launch vehicle programs, through which NASA will provide, on a cost-reimbursable basis, access to agency launch support property and services.

o A memorandum of understanding between NASA and the Technical and Administrative Services Corps., Washington, D.C., which provides a forum for the exchange of research information associated with closed environment systems related to food production both on Earth and in space.

o The Small Business Innovation Research Division awarded 280 Phase 1 and 84 Phase 2 contracts to small, high technology firms. Additional Phase 2 awards, to be made in early 1991, are expected to bring the total number of selections to more than 120.

SPACE EXPLORATION

NASA made significant advances this year in organizing and developing an approach to carry out President Bush's Space Exploration Initiative (SEI) to return to the Moon permanently and send humans to explore Mars.

In February, NASA Administrator Richard H. Truly announced the merger of the Office of Exploration, which laid the foundation for the SEI, with NASA's Office of Aeronautics and Space Technology to form the Office of Aeronautics, Exploration and Technology.

Reconfirming Administration support for the SEI, the White House issued two policy statements. The first named NASA as the principal implementing agency, with the Departments of Defense and Energy playing major roles in technology development and concept definition, and the National Space Council coordinating implementation strategy. The second dealt with an exploratory dialogue on international participation in SEI. This dialogue, with Europe, Japan, Canada, the Soviet Union and others, is expected to occur in 1991.

In May, President Bush announced a goal to land humans on Mars no later than 2019. Shortly after that, Truly announced that NASA will launch an SEI Outreach effort to collect new and innovative concepts and technologies from across the nation to carry out SEI. Truly appointed a committee, known as the Synthesis Group and headed by Lt. Gen. Tom Stafford, USAF, (Ret.), to analyze the ideas submitted from academia, industry and government sources. The group will synthesize inputs from the outreach program into several significantly different architectures and will identify promising technologies to be pursued and near-term milestones, as well. It will report to Administrator Truly in late February or early March 1991.

Meanwhile, NASA and the Department of Energy signed a memorandum of understanding to cooperate on SEI. At year's end, discussions on cooperative SEI agreements between NASA and the Department of Defense and the National Science Foundation were nearing completion.

AERONAUTICS AND SPACE TECHNOLOGY

Aeronautics

NASA aeronautics celebrated 75 years of excellence in 1990. It was on March 3, 1915 that Congress created the National Advisory Committee for Aeronautics (NACA) with an appropriation of just $5,000. From that modest beginning, the NACA grew into the world's premier aeronautics research organization, pushing back the frontiers of flight for more than 4 decades. When NASA was established in October 1958, NACA centers and personnel formed the nucleus of the fledgling aerospace agency.

NASA remained true to its NACA heritage during the past year, conducting a broad range of fundamental and applied aeronautical research programs. High-speed civil transport studies commissioned by NASA have led to a focused High-Speed Research Program that emphasizes the environmental compatibility of a next-generation supersonic transport.

The preliminary results of emissions research show promise that acceptable emission levels can be achieved. Similarly, research indicates that compliance with noise reduction standards is possible.

NASA's Langley Research Center, Hampton, Va., the U.S. Air Force and Boeing Commercial Aircraft Group, Seattle, jointly flight tested a "hybrid" laminar (smooth) air flow control system on a Boeing 757 airliner from March through August. The plane mounted a porous experimental section on the leading edge of the left wing, followed by a run of natural laminar airflow. The results -- laminar flow was achieved over the forward 65 percent of the wing surface -- could lead to significantly reduced fuel consumption and lower operating costs for future U.S. subsonic transports.

Ames-Dryden Flight Research Center, Edwards, Calif., completed military utility evaluations of the X-29 research aircraft in high angle-of-attack flight at speeds up to 0.6 times the speed of sound. Researchers discovered that small variations in key aerodynamic parameters can yield significant variations in total aircraft characteristics at high flight-angles-of-attack.

The result was that the X-29 had better flying qualities than expected, allowing the design of flight control system software overlays to improve roll performance. Predictions show that roll performance near maximum lift may be much better than current fighter aircraft.

In a joint program with the U.S. Air Force, the Ames-Dryden facility successfully demonstrated a self-repairing flight control system concept using NASA's F-15 Highly Integrated Digital Electronic Control aircraft. The system concept included real-time reconfiguration of flight control surfaces, fault detection and isolation, positive pilot alert and maintenance diagnostics to facilitate repairs.

If fully developed, the system could greatly increase the ability of aircraft to survive battle damage and enhance safety during training missions.

X-30 National Aero-Space Plane

The X-30 National Aero-Space Plane (NASP) program, a joint NASA/Department of Defense effort, reached a milestone in May when the five primary NASP contractors formally merged into a single national contractor team. Combining the technical expertise and top ideas of the contractors -- Rockwell International, McDonnell Douglas, General Dynamics, Pratt & Whitney and Rocketdyne -- has produced a strong team that now uses all the best ideas from industry.

The NASP program took another "giant leap" at the end of October when a new configuration for the X-30 NASP flight research vehicle was unveiled. The latest concept, a twin-tailed lifting-body shape, is a blend of design concepts from the contractor team. In addition, the technical progress of the program continued with major advances in scramjet engine testing and large-scale structural components.

Space Technology

After nearly 6 years in Earth orbit, the Long Duration Exposure Facility (LDEF) was brought home by the crew of STS-32 in January. LDEF's 57 science and technology experiments are providing a bonanza of information about the effects of long-term exposure to the harsh environment of space -- knowledge that will be invaluable to the design of tomorrow's space vehicles.

Two prototype planetary robots made their debut during the year. "Ambler" is a six-legged, 12-foot-tall testbed developed for NASA by Carnegie Mellon University, Pittsburgh. It will test technology for robots that may literally walk through rough terrain on the Moon and Mars. "Robby," a more conventional six-wheeled articulated vehicle, was designed by NASA's Jet

Propulsion Laboratory, Pasadena, Calif. Both robots are equipped with experimental computerized navigation systems that let them travel autonomously according to preprogrammed general instructions.

In April, NASA dedicated the Human Performance Research Laboratory (HPRL) at Ames Research Center, Mountain View, Calif. HPRL is the nation's first facility dedicated to studying the role of people in advanced aviation situations and long-duration space travel. The lab also will research the relationships between humans and computers in its Automation Sciences Research Facility, now under construction.

NASA announced in November that it has joined the Concurrent Supercomputing Consortium, a newly-formed group of research organizations that will tackle some of today's most demanding computational challenges. As a benefit of the agency's membership, NASA researchers will have access to the world's fastest supercomputer, the Touchstone DELTA system, when it becomes operational at the California Institute of Technology, Pasadena, Calif., next spring.

Langley Research Center and Honeywell's Space Systems Group, Clearwater, Fla., conducted joint flight tests of an automated landing system in October and November. NASA's Boeing 737 research aircraft made 36 landings using a Honeywell integrated differential navigation system linked to the Global Positioning System constellation of Earth-orbiting satellites. The test data will be useful in designing auto-landing equipment for future spacecraft and will help researchers assess how to reduce risk in automated touchdowns.

INTERNATIONAL RELATIONS

Highlights of NASA's international cooperative activities in 1990 included the launch of three international missions:

o In October 1990, the European Space Agency's Ulysses spacecraft was successfully launched from the Space Shuttle.

Ulysses is a joint NASA/ESA program to study the poles of the Sun and interplanetary space above and below the poles. ESA developed the spacecraft, its ground control computer system and a number of the scientific instruments. NASA provided the upper stages, radioisotopic thermoelectric generator, a part of the science instrument payload, Space Shuttle launch and tracking and data acquisition.

o NASA's Hubble Space Telescope, also a cooperative program, was successfully launched from the Space Shuttle in April 1990. ESA provided the Faint Object Camera and the Solar Arrays. In return for their contributions, ESA will receive 15 percent of the HST's viewing time.

o In June, Roentgen Satellite, a German X-ray spacecraft, was successfully launched aboard a McDonnell Douglas Delta II expendable launch vehicle from Cape Canaveral Air Force Station, Fla. The spacecraft is a NASA/German Space Agency cooperative program which will provide a detailed survey of the X-ray sources across the sky, followed by studies of some 1,000 of the anticipated 50,000 to 100,000 sources that will be detected.

Additional international cooperative activities during the year included initiatives in a number of areas of civil space:

o NASA has invited Japan, Canada and Europe to provide two mission specialist astronaut candidates to join the July 1992 astronaut training class. It is NASA's intention to offer Space Shuttle flight assignments to one or both of each countries' mission specialist candidates in the years following the successful completion of the training program.

o The Italian Tethered Satellite arrived at the Kennedy Space Center, Fla., in November, for final testing and preparation for launch on STS-46 in early 1992, accompanied by an Italian payload specialist. Two Italian candidates are in training.

o Cooperation with the Soviet Union continued to progress under the U.S./USSR joint working groups (JWG) on space biology and medicine; solar system exploration; space astronomy and astrophysics; solar-terrestrial physics and Earth sciences.

Key activities included:

o NASA and its Soviet counterpart signed an agreement on July 25, 1990, to fly NASA's Total Ozone Mapping Spectrometer on a Soviet Meteor-3 spacecraft in 1991. The objective of this project is to continue the availability of global ozone data to assess important environmental phenomena such as the Antarctic ozone hole.

o In March, NASA agreed to participate in the Soviet Academy of Sciences' radio telescope project, RADIOASTRON, a 3-4 year mission set for launch in the mid-1990s. The RADIOASTRON mission will explore fundamental astrophysical phenomena, including active galaxies and quasars, neutron stars and black holes. NASA will provide precision tracking and the loan of data recorders to support the large Soviet orbiting radio telescope.

o U.S./USSR officials continued discussions on flying the U.S. X-ray All Sky Monitor and an X-Ray Polarimeter on the Soviet Spectrum-X-Gamma high energy astrophysics mission in 1993/1994. Planning also continued on NASA flying a Soviet gamma-ray burst instrument, Konus, on the U.S. spacecraft, scheduled for launch in 1992.

o In November, NASA participated with ESA, the Institute of Space and Astronautical Science of Japan and the Intercomsmos Council of the Soviet Academy of Sciences in meetings of the Inter-Agency Consultative Group for Space Science. The group coordinates more than a dozen space missions in the field of space physics planned by these agencies.

o In July, NASA hosted an International Spacecraft Rendezvous and Docking Conference at the Johnson Space Center. The conference included participation by representatives from the U.S. (NASA), Japan (NASDA), Canada (CSA), and Europe (ESA). The purpose of the conference was to identify standards for design and/or operational practices necessary to accommodate or enable cooperative and/or joint operations in space.

o During the summer of 1990, NASA and Environment Canada together with members of the Canadian Institute for Research in Atmospheric Chemistry, conducted a major joint NASA/Canada atmospheric mission. This project, entitled Atmospheric Boundary Layer Experiment-3, was a part of NASA's Global Tropospheric Experiment, a major scientific initiative established to study the underlying science of man's impact on the chemistry and dynamics of the global troposphere.

OFFICE OF SPACE OPERATIONS

The Office of Space Operations (OSO) provided tracking, communications and data acquisition for three major science missions: the Magellan on its mission to map the surface of Venus; Ulysses, a mission to the sun and the Hubble Space Telescope. OSO also provided coverage for six Space Shuttle flights; the Galileo spacecraft's Earth flyby on its journey to Jupiter and Titan; the Voyagers and Pioneers spacecraft as they leave the solar sytem; atmospheric research activities; and Earth-orbiting spacecraft monitoring weather and other environmental phenomenon.

The fifth Tracking and Data Relay Satellite has essentially been completed and will be ready for launch on a Space Shuttle flight in 1991.

The Advanced Tracking and Data Relay Satellite System (ATDRSS) Phase B study contracts were awarded. Participating companies are to demonstrate their ability and capacity to design, manage, integrate and test large, modern communications spacecraft and associated ground facility modifications. The ATDRSS will ensure the essential continuation of the space network through the year 2012.

Officials of the Goddard Space Flight Center, Greenbelt, Md., and Contel Federal Systems, Chantilly, Va., signed an agreement transferring the title of the TDRSS to NASA effective July 1, 1990. Under the agreement, Contel transferred ownership of the space communication system 42 months earlier than called for under the original 1976 contract.

OFFICE OF SAFETY AND MISSION QUALITY

The Government Accounting Office reviewed the Office of Safety and Mission Quality (SMQ) and concluded that the office is working well in providing independent oversight, review, assessment and policy development . One specific recommendation addressed in the report was to modify the processes and procedures for formulating the SMQ budget to ensure that SMQ activities are funded independently of the programs and activities they are responsible for overseeing. The Associate Administrator for SMQ is evaluating the recommendation.

The Aerospace Safety Advisory Panel presented its annual report to the NASA Administrator. The report covered February 1989 through January 1990, providing findings, recommendations and supporting material regarding the Shuttle, Space Station Freedom, aeronautics and other NASA activities. Overall the report concluded that NASA's management organization is reasonably well defined, communications effective and launch procedures controlled and disciplined.

SMQ made a significant contribution to the successful launch of the Ulysses spacecraft and contingency planning of the Galileo spacecraft flyby. In addition to overall safety planning, the office was responsible for conducting independent reviews and evaluations of risks posed by the use of onboard nuclear power systems. Other activities included developing and coordinating radiological dispersion models, coordinating SMQ approval of contingency plans and safety procedures for all agencies and individuals involved and coordinating and conducting emergency simulations to ensure readiness in the event of a radiological accident.

Over 700 government, academic and contractor personnel, representing over 300 organizations, attended the Seventh Annual NASA/Contractors Conference held in Grenelefe, Fla. The conference provided a forum for senior NASA and aerospace management to exchange information and experiences on Total Quality Management and the continuous improvement process.

NASA Administrator Richard H. Truly announced at the Seventh Annual NASA/Contractors Conference that the NASA Excellence Award would be renamed the George M. Low Trophy: NASA's Quality and Excellence Award. Truly said that "George Low represented quality and excellence like few others and was involved in every success the American space program had". Low was manager of the Apollo spacecraft program and later was Deputy Administrator of NASA from 1969 to 1976.

Rockwell International, Space Systems Division, Downey Calif., and Marotta Scientific Controls, Inc., Montville, N.J., two of nine finalists selected in May, were named recipients of the 1990 George M. Low Trophy. Marotta was the first recipient of the award in the newly established small business category.

The award recognizes NASA prime contractors, subcontractors and suppliers for outstanding achievement in quality and productivity improvement and Total Quality Management.

The Johnson Space Center was chosen as one of three Quality Improvement Prototypes, a distinction that will make it a model for quality improvement efforts at other NASA centers and an example to all federal agencies.

The NASA Trend Analysis Working Group held a special session for various government and industry representatives explaining the NASA trend analysis program. Created in response to recommendations of the Rogers Commission Report, the group ensures that all significant problems and trends that either affect flight hardware and/or systems are quickly identified and communicated to the proper level.

EDUCATIONAL AFFAIRS

NASA adopted the National Education Goals set by the President and the Governors as fundamental guidelines for developing and conducting education programs. As a result, a complementary 10-year plan is being developed.

In May, NASA and DOE announced a memorandum of understanding to collaborate on education programs to help improve the nation's science, engineering and math programs.

Astronauts presented the first live lesson from space on Dec. 7 during the STS-35, Astro-1 mission. "Space Classroom, Assignment: The Stars," focused on the electromagnetic spectrum and its relationship to the high-energy astronomy mission. The 30-minute science lesson was conducted by orbiting Payload Specialist Sam Durrance and Mission Specialist Jeff Hoffman.

Following the crew presentation, Karen Weidenhofer, a teacher, conducted a 1-hour follow-up lecture. The lesson concluded with orbiting Mission Specialist Bob Parker and Payload Specialist Ron Parise answering questions from 12 students in a

classroom at Marshall Space Flight Center and 28 students in a control room at Goddard Space Flight Center. An edited version of the lesson and accompanying teachers guide will be distributed nationally.

Over 4 million budding student scientists planted gardens during the spring semester to experiment with tomato seeds flown in space. Students grew and monitored space-exposed seeds and Earth-based seeds, searching for differences caused by long-term effects of exposure to radiation. The Space Exposed Experiment Developed for Students (SEEDS), was one of 57 experiments housed on the LDEF satellite. NASA distributed over 132,000 kits to approximately 64,000 teachers. Results will be compiled, analyzed and published during the Spring 1991.

Last year 21 Designated Space Grant Colleges/Consortia were selected initiating NASA's National Space Grant College and Fellowship Program. In an effort to expand the program, Phase II was announced in May 1990 offering institutions in the remaining 29 states and the District of Columbia an opportunity to compete for Program Grants or Capability Enhancement Grants. Grantees will be announced in early 1991.

In a new education initiative, the Teacher Training Pre-Service Program, research grants were awarded to two universities to develop teacher training courses that will enable teachers to incorporate aerospace topics and concepts into their classrooms and to create new and imaginative practices in learning.

In March, NASA debuted the first of what it hopes will become a small fleet of tractor-trailer mounted mobile teacher resource centers that will travel the nation providing lesson materials to teachers who could not otherwise travel to a NASA field center. The mobile center is part of a larger education initiative, project LASER (Learning About Science, Engineering and Research).

The LASER van is outfitted with six work stations each equipped with a computer providing acess to "NASA Spacelink," and electronic information system with a broad range of information and educational materials and a videotape recorder and monitoring system for copying NASA educational videotapes. Teachers also can photocopy and duplicate lesson plans, activities and slides.

A student experiment, selected under the Space Shuttle Student Involvement Program, flew aboard the Space Shuttle Discovery in April 1990. On STS-31, student investigator Greg Peterson, Brigham City, Utah, flew an experiment designed to study the effects of weightlessness on electrical arcs.

In its 10th year, the Space Science Student Involvement Program selected eight national winners in the Space Station category. Top honors, plus a $2,500 scholarship, went to Catherine Cusimano, Landsdale, Pa., and to Jihyun Oh, Lenexa, Kan. Also honored were national winners in the Space Station, Student Newpaper advertisement, Newspaper Feature and Moon Base competitions.

The Aerospace Education Services Project continues to be one of NASA's most popular education programs. During 1990, over 1.3 million students and 20,500 teachers were reached through school visits, classroom lectures and teacher workshops.

During the summer, educators spent 2 weeks at one of NASA's nine field centers learning the latest in aerospace science and working with educational specialists to fit materials into a classroom curriculum. There were 115 elementary school teachers participating in NASA's Educational Workshop for Elementary School Teachers and 100 teachers participating in NASA's Educational Workshops for High School Math and Science Teachers.

Over 120,000 educators in the 50 states and parts of Canada tuned in for NASA's satellite video conferences for educators. NASA projects covered in the live, interactive program this year included the Mission to Planet Earth program, Astro-1 mission, SEEDS and Robotics in Space.

Over $10 million was awarded to 523 students at approximately 150 universities for advanced study in engineering and space, physical, life and environmental sciences under NASA's Graduate Student Researcher's Program, including the Under-represented Minority Focus component.

Continuing its efforts to encourage the next generation of scientists and engineers, NASA selected 37 graduate students at U.S. universities to take part in the new Global Change Fellowship Program. Students will conduct research in atmospheric physics and chemistry, biogeochemistry, ecosystems, hydrology and oceanography, receiving $22,000 beginning in the 1990-91 academic year.

FY 1991 NASA APPROPRIATIONS

The VA-HUD-Independent Agencies Appropriations Bill for Fiscal Year 1991 was signed Nov. 5. NASA's funding was set at $13,868.3 billion, a 13 percent increase over 1990, but $1.257 billion less than the President's request of $15,125.2 billion.

NASA's request was designed to fund a start-up of the Space Exploration Initiative, begin hardware development of Space Station Freedom, continue research and development on projects such as the Earth Observing System and the National Aerospace Plane while proceeding with on-going and planned space science missions and Shuttle operations.

As Congress considered NASA's budget request, several issues emerged which had an impact on the final outcome. Most important of these were the Administration/Congressional Budget Summit negotiations aimed at cutting the federal budget deficit. At the same time, oversight committees in both the House and Senate were questioning NASA's management of large-scale projects in hearings on problems such as the Hubble Space Telescope's spherical aberration, the Shuttle hydrogen leaks and maintenance requirements for the Freedon Sspace Station.

On Oct. 16, House-Senate appropriation conferees reached an agreement which included $1.9 billion for SSF, $551 million less than requested, and deleted funding for SEI. Additionally, NASA was directed to submit plans for a redesigned space station and advised to expect growth of no more than 10 per cent over the next 5 years. The bill was passed by the Senate on Oct. 25 and by the House the following day.

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NASA ANNOUNCES CREW MEMBERS FOR FUTURE SHUTTLE FLIGHTS

The National Aeronautics and Space Administration today announced crew members for future Space Shuttle flights STS-48 Upper Atmosphere Research Satellite (UARS), STS-46 Tethered Satellite Systems, STS-49 Intelsat, and STS-50 United States Microgravity Laboratory (USML-1).

STS-48 UARS, scheduled for Nov. 1991, is a mission to study the Earth's upper atmosphere on a global scale. Nine UARS sensors will provide comprehensive data on energy inputs, winds, and chemical composition of the stratosphere. Crew members are:

Commander: John O. Creighton, Capt. USN
Pilot: Kenneth S. Reightler, Jr., Cdr. USN
Mission Specialists: James F. Buchli, Col. USMC
Mark N. Brown, Col. USAF
Charles D. "Sam" Gemar, Maj. USA

Creighton, 47, was born in Orange, Texas, and received his bachelor of science from the U.S. Naval Academy and master of science in administration of science and technology from George Washington University. He was pilot on STS 51-G and commander on STS-36.

Reightler, 39, was born at Patuxent River Naval Air Station, Maryland, and received his bachelor of science in aerospace engineering from the U.S. Naval Academy; master of science in aeronautical engineering from the U.S. Naval Postgraduate School and master of science in systems management from the University of Southern California. He was selected as a pilot astronaut in 1987, and this is his first Shuttle mission.

Buchli, 45, was born in New Rockford, North Dakota, and received his bachelor of science in aeronautical engineering from the U.S. Naval Academy and master of science in aeronautical engineering systems from the University of West Florida. He has flown on STS 51-C, STS 61-A, and STS-29.

-more-

Brown, 39, was born in Valparaiso, Indiana, and received his bachelor of science in aeronautical and astronautical engineering from Purdue University and master of science in astronautical engineering from the U.S. Air Force Institute of Technology. He flew on STS-28.

Gemar, 35, was born in Yankton, South Dakota, and received his bachelor of science in engineering from the U.S. Military Academy. He flew on STS-38.

STS-46 TSS, scheduled for March 1992, is a tethered satellite which will be deployed from the orbiter payload bay on an approximately 12-mile (20 km) tether where it will collect electrodynamic data in the upper reaches of the Earth's atmosphere. Also, the European Retrievable Carrier (EURECA), a free-flying reusable platform dedicated to material science and life science experiments, will be deployed. Crew members are:

Commander: Loren J. Shriver, Col. USAF
Pilot: James D. Wetherbee, Cdr. USN
Mission Specialists: Andrew M. Allen, Maj. USMC
Other Mission Specialists previously named to this flight are: Franklin R. Chang-Diaz, Ph.D.
Jeffrey A. Hoffman, Ph.D.
Claude Nicollier, ESA Astronaut
Payload Specialist: A prime and backup payload specialist will be selected from the two announced candidates:
Umberto Guidoni - Italy
Franco Malerba - Italy

Shriver, 46, was born in Jefferson, Iowa, and received his bachelor of science in aeronautical engineering from the U.S. Air Force Academy and master of science in astronautical engineering from Purdue University. He was pilot on STS 51-C and commander on STS-31.

Wetherbee, 38, was born in Flushing, New York, and received his bachelor of science in aerospace engineering from the University of Notre Dame. He was pilot on STS-32.

Allen, 35, was born in Philadelphia, Pennsylvania, and received his bachelor of science in mechanical engineering from Villanova University. He was selected as a pilot astronaut in 1987, and this is his first Shuttle mission.

STS-49 Intelsat, scheduled for May 1992, is a flight on which crew members will attach a new booster and redeploy the Intelsat satellite. Additionally, three Extra-Vehicular Activities (EVAs--spacewalks) will be performed in an extensive test of EVA techniques to be employed during assembly of Space Station Freedom. This will be the first flight for the new orbiter Endeavour. Crew members are:

Commander: Daniel C. Brandenstein, Capt. USN
Pilot: Kevin P. Chilton, Maj. USAF
Mission Specialists: Pierre J. Thuot, Cdr. USN
Kathryn C. Thornton, Ph.D.
Richard J. Hieb
Thomas D. Akers, Maj. USAF
Bruce E. Melnick, Cdr. USCG

Brandenstein, 47, was born in Watertown, Wisconsin, and received his bachelor of science in mathematics and physics from the University of Wisconsin at River Falls. He was pilot on STS-8 and commander on STS 51-G and STS-32.

Chilton, 36, was born in Los Angeles, California, and received his bachelor of science in engineering sciences from the U.S. Air Force Academy and master of science in mechanical engineering from Columbia University. He was selected as a pilot astronaut in 1987, and this is his first Shuttle mission.

Thuot, 35, was born in Groton , Connecticut, and received his bachelor of science in physics from the U.S. Naval Academy and master of science in systems management from the University of Southern California. He flew on STS-36.

Thornton, 38, was born in Montgomery, Alabama, and received her bachelor of science from Auburn University, master of science and doctorate of philosophy in physics from the University of Virginia. She flew on STS-33.

Hieb, 35, was born in Jamestown, North Dakota, and received his bachelor of arts in mathematics and physics from Northwest Nazarene College and master of science in aerospace engineering from the University of Colorado. He is scheduled to fly on STS-39 in March 1991.

Akers, 39, was born in St. Louis, Missouri, and received his bachelor and master of science in applied mathematics from University of Missouri-Rolla. He flew on STS-41.

Melnick, 41, was born in New York, New York, and received his bachelor of science in engineering from the U.S. Coast Guard Academy and master of science in aeronautical systems from the University of West Florida. He flew on STS-41.

STS-50 USML-1, scheduled for June 1992, is a complement of microgravity materials processing technology experiments to be flown on the first Extended Duration Orbiter mission aboard Columbia. This mission is planned for a 13-day duration, the longest Shuttle mission to date. Crew members are:

Commander: Richard N. Richards, Capt. USN
Pilot: John H. Casper, Col. USAF
Mission Specialists: Kenneth D. Bowersox, Lt.Cdr. USN
Bonnie J. Dunbar, Ph.D. Payload Commander (previously named)
Carl J. Meade, Lt. Col. USAF
Payload Specialists: Two prime and two backup payload specialists will be selected from the announced candidates:
Lawrence J. DeLucas, Ph.D.
Joseph M. Prahl, Ph.D.
Albert Sacco, Jr., Ph.D.
Eugene H. Trinh, Ph.D.

Richards, 44, was born in Key West, Florida, and received his bachelor of science in chemical engineering from the University of Missouri and master of science in aeronautical systems from the University of West Florida. He was pilot on STS-28 and commander on STS-41.

Casper, 47, was born in Greenville, South Carolina, and received his bachelor of science in engineering science from the U.S. Air Force Academy and master of science in astronautics from Purdue University. He was a pilot on STS-36.

Bowersox, 34, was born in Portsmouth, Virginia, and received his bachelor of Science in aerospace engineering from the U.S. Naval Academy and master of science in mechanical engineering from Columbia University. He was selected as a pilot astronaut in 1987, and this is his first Shuttle mission.

Meade, 40, was born at Chanute AFB, Illinois, and received his bachelor of science in electrical engineering from the University of Texas where he participated in plasma dynamics research and master of science in electronics engineering from the California Institute of Technology as a Hughes Fellow doing research involving the application of information theory to neurophysiology. He flew on STS-38.

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NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release:

Mark Hess
Headquarters, Washington, D.C.
(Phone: 202/453-4164)

January 8, 1991

Barbara Schwartz
Johnson Space Center, Houston
(Phone: 713/483-5111)

RELEASE: 91-4

ASTRONAUT FISHER TO LEAVE NASA

Astronaut William F. Fisher, M.D., will resign from NASA effective Jan. 31, 1991. He will return to the full-time practice of medicine as an emergency specialist at Humana Hospital-Clear Lake, Houston, Texas.

Selected by NASA in 1980, Dr. Fisher was a mission specialist on the 20th Space Shuttle mission in August 1985. During this flight the crew deployed three communication satellites, then performed a successful on-orbit rendezvous with the ailing 15,400 lb SYNCOM IV-3 satellite. Fisher, along with Astronaut James van Hoften, performed two EVA's (Extravehicular Activity) to successfully repair the satellite. The first of these spacewalks was the longest in the history of spaceflight.

In his 10 years with NASA, Dr. Fisher's work has included high altitude research on the WB57 aircraft, astronaut office representative for Extravehicular Mobility Unit or spacesuit and EVA procedures and development, support crewman for Shuttle mission STS-8, capsule communicator for STS-8 and STS-9, Chief of Astronaut Public Appearances and the Manned Maneuvering Unit jet-powered backpack development team. His most recent assignment was to co-chair, with NASA robotics expert Charles R. Price, the External Maintenance Task Team for Space Station Freedom.

In his letter of resignation, Dr. Fisher stated, "It has been both an honor and a privilege to have served as a NASA astronaut over the past 10 years. I know of no higher purpose, and have met no finer people. I wish you every success in the future."

-end-

NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release:

Barbara Schwartz
Release No. 91-5

January 14, 1991

NOTE TO EDITORS: SHUTTLE MISSION STS-39 PREFLIGHT BRIEFINGS SCHEDULED

A series of preflight briefings for mission STS-39, the first unclassified Department of Defense Space Shuttle flight, will be held Jan. 23 and 24, 1991, at the Johnson Space Center, Houston, Building 2, Room 135.

Lead Flight Director Ronald D. Dittemore will begin the briefings on the 23rd at 8:30 a.m. CST with a mission overview. DOD payload briefings will begin at 10 a.m. CST. The STS-39 astronauts will present information on their individual flight assignments at 1 p.m. CST.

On Jan. 24, beginning at 1 p.m. CST, the astronaut crew will be available for round robin interviews. Media representatives wishing to participate in the interviews should notify the JSC newsroom by the afternoon of Jan. 17.

Only the briefings will be carried on NASA Select television. Two-way audio for questions and answers will be available at NASA Headquarters, Washington, D.C., and other NASA centers.

NASA Select programming is carried on Satcom F2R, transponder 13, located at 72 degrees west longitude.

\- end -

NASA News

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AC 713 483-5111

For Release:

Barbara Schwartz
Release No. 91-013

February 15, 1991

NOTE TO EDITORS: SHUTTLE MISSION STS-37 PREFLIGHT BRIEFINGS

News media are invited to attend briefings on Space Shuttle mission STS-37 Feb. 25 and 26 to be held at the Johnson Space Center (JSC) in Houston and at Goddard Space Flight Center (GSFC) in Greenbelt, Maryland. The major objectives of this mission are to deploy the Gamma Ray Observatory (GRO) and to conduct a six-hour EVA (Extravehicular Activity better know as a "spacewalk") to evaluate proposed Space Station Freedom equipment operations.

On Feb. 25 at 8 a.m. CST, Lead Flight Director Chuck Shaw will begin the briefings with a mission overview. At 9 a.m. CST, GRO engineers and scientists will report on the status and mission of NASA's second great observatory. This will be followed by briefings on Bioserve-Instrumentation Technology Associates Materials Dispersion Apparatus (BIMDA) and Protein Crystal Growth (PCG-III). At 1 p.m. CST, the STS-37 crew will review each person's flight duties. All briefings will originate from JSC except the GRO briefings which will be held at GSFC.

The astronauts will be available for round robins interviews following the briefings. News media wishing to participate in the interview sessions should contact Barbara Schwartz at (713) 483-5111 by Feb. 20. Media planning to attend the briefings at GSFC should call Randee Exler (301) 286-8955.

An EVA workshop has been planned for Feb. 26 beginning at 9 a.m. CST in Bldg. 9B on the air bearing floor. Activities include a briefing on EVA planning and equipment development, an opportunity to try out the equipment, a display of EVA tools and spacesuit, and a visit to the Weightless Environment Training Facility to see astronauts participating in an EVA training exercise.

The briefings on Feb 25 will be carried on NASA Select television with two-way audio for press participation at NASA Headquarters, GSFC, and other NASA Centers. The round robins and EVA workshop will not be televised.

NASA Select television is carried on RCA SATCOM F2R, transponder 13, located at 72 degrees west longitude.

NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
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For Release:

Barbara Schwartz
Release No. 91-016

February 19, 1991

SPACE AGE LEARNING TOOLS AVAILABLE

Although NASA has been sending humans into space for more than 30 years, spacefligt is still new to middle school children and basic questions are very much on their minds. With the help of the Astronaut Corps, NASA is producing space age learning tools to relate space flight and other scientific concepts to teachers and students at all grade levels and subject areas. NASA today released the first in this new series of educational video products. This new video package, Liftoff to Learning: Space Basics, illustrates orbital science.

Space Basics was filmed on location at the NASA Johnson Space Center, Houston, NASA Kennedy Space Center, Fla., and in orbit onboard Space Shuttle mission STS-41. The 21-minute video combines the answers to basic questions with exciting space photography and colorful special effects. Accompanying the tape is an 8-page video resource guide for teachers that provides background information on rockets and orbits as well as suggestions for hands-on classroom activities. The guide also includes a vocabulary list, reference list and details about the crew members.

Observing that space captures students interest in science, math and technology, NASA is developing a variety of educational materials, including video tapes, slide sets and educational publications relating to specific Space Shuttle missions and space flight concepts. For each Shuttle mission a 4-page teachers guide, Mission Watch, will be produced describing the mission, payloads, experiments, and science objectives, and includes suggested classroom activities and references. At the end of the mission, a 4-page summary report, Mission Highlights will be available to educators.

These new space age learning products are the result of a team effort involving NASA Headquarter's Educational Affairs Division, the Astronaut Corps, Space Shuttle Support Office, program and science people, flight directors and planners, television production people and public affairs.

Products currently available include:

o Liftoff to Learning: Space Basics, video and teachers guide (available March 4)
o Mission Watch teachers guides for STS-41 and 35
o Mission Highlights summary for STS-41 and 35
o STS-35 Astro-1 teachers guide and slide set

The video Liftoff to Learning, Space Basics, can be taped at home or at school by tuning to Satcom F2R satellite, 72 degrees West longitude, transponder 13. The video will be transmitted at noon and repeated at 6 p.m. EST every Tuesday and Thursday in February and will run periodically thoughout the month of March.

Educators can contact NASA's Teacher Resource Centers for information on obtaining copies of the Space Basics videotape and resource guide (available March 4), Mission Watch and Mission Highlights. Videotapes and slide sets are also available by phoning NASA CORE on 216/744-1051 for information. And with a modem, educators can access NASA Spacelink, a computerized space education data base on 205/895-0028 for all printed education materials.

- end -

NASA News

National Aeronautics and
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Washington, D.C. 20546
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Mark Hess
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(Phone: 202/453-4164)

Jeffrey Carr
Johnson Space Center, Houston
(Phone: 713/483-5111)

For Release

February 26, 1991

RELEASE: 91-35

JSC ESTABLISHES FREEDOM OPERATIONS PROJECT OFFICE

The Johnson Space Center, Houston, has established a project office for the development and implementation of Space Station Freedom (SSF) flight operations.

The Space Station Mission Operation Project Office resides within the Mission Operations Directorate (MOD), which has overall responsibility for the development and conduct of flight planning, training and operations for the Space Shuttle and SSF programs.

MOD Director Eugene Kranz described the new organization, saying, "It's intended to provide for more direct interaction between MOD and the work packages, institutions and international elements in developing and defining operating concepts, requirements and responsibilities. The change also will enhance our support of these organizations in the design of space systems and the development of operations facilities".

The new office will be headed by Charles R. Lewis who will report directly to Robert W. Moorehead, Deputy Director for Program and Operations, SSF Program Office, on all aspects of planning, training and management of SSF flight operations.

After graduating from New Mexico State University with a B.S. in Electrical Engineering, Lewis worked for a year at the Goddard Space Flight Center, Greenbelt, Md., on radio frequency systems before joining the NASA Space Task Group at the Langley Research Center, Hampton, Va., in 1962. Lewis moved to Houston with the task group in 1962 after establishment of the Manned Spacecraft Center, now the Lyndon B. Johnson Space Center.

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Since 1962, Lewis has held several highly responsible positions at JSC in mission operations. He served during the Mercury and Gemini programs as remote site Spacecraft Communicator. He served as Assistant Flight Director during Apollo and as Flight Director for Apollo 17, all Skylab flights, the Apollo Soyuz Test Project and Shuttle missions 1, 2, 4 and 9. In 1984, Lewis was named Chief of Flight Operations Integration and then as the MOD Chief of Space Station Operations Integration in 1985.

- end -

NASA News
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AC 713 483-5111

For Release:

Kari Fluegel
Release No. 91-021

March 13, 1991

RESEARCHERS GATHER FOR 22ND PLANETARY SCIENCE CONFERENCE

Investigating Venus, Earth and the moon through the eyes of Magellan and Galileo will be just one of the many highlights during the 22nd Lunar and Planetary Science Conference at the Johnson Space Center in Houston next week.

More than 750 scientists and researchers from around the world will focus on the latest discoveries and investigations of our universe during the weeklong conference starting Monday at JSC's Gilruth Center.

The manned exploration initiative and the current and on-going unmanned planetary exploration will be the focus of two evening sessions open to the public.

On March 18, senior NASA officials will discuss the agency's exploration initiative and the recent findings of the Advisory Committee on the Future of the U.S. Space Program chaired by Norman Augustine.

That session, "Science Exploration and the New NASA," will be led by Dr. Carolyn Huntoon, director of JSC's Space and Life Sciences Directorate, and Dr. Michael Duke, Lunar and Mars Exploration Program Office program scientist at JSC. Panel participants will be JSC Director Aaron Cohen; Chief Scientist for Martin Marietta Noel Hinners; Jet Propulsion Laboratory Director Edward C. Stone; and Assistant Administrator for the Office of Space Science and Applications Lennard Fisk.

On March 20, Wesley Huntress, director of NASA's Solar System Exploration Division, will lead a special session on "Venus, Earth and Moon: New Views from Magellan and Galileo."

Magellan, an unmanned planetary probe launched in May 1989, is now in orbit around Venus, doing a detailed mapping of the planet. Galileo, launched in October 1989, has completed

-more-

gravity assist maneuvers around Venus, the Moon and Earth on its way to Jupiter.

Within the past year, the two probes have returned numerous photographs and spawned countless discoveries during their journeys. Huntress will discuss the latest pictures from the spacecrafts.

Both programs begin at 8 p.m. in the Bldg. 2 Teague Auditorium and are open to the public free of charge.

Topics for the conference seminars were drawn from a total of 791 abstracts submitted to the LPI. The concurrent technical sessions begin at 8:30 a.m. and at 1:30 p.m. Monday through Thursday. Friday's sessions begin at 8:30 a.m. only.

Monday's sessions will cover Magellan at Venus; Interstellar Grains; Venus Tectonics; Chondrules and Chondrites; Mars: Remote Sensing I; and Planetary Differentiation. On Tuesday, conference sessions will focus on Volcanism and Cratering; Mars Remote Sensing II; Cosmic Dust I; Basaltic Lunar Meteorites and Lunar Resource Utilization; Moonviews: From Galileo, Apollo and Earth; Refractory Inclusions; Cosmic Dust II and Comets; SNC, Ureilites and MAC88177.

Wednesday's sessions will be Terrestrial Impact Structures; Mars: Channels and Water; Rocks: A to HED; Mars Geology; From Interstellar Grains to Asteroids: Joint Session of the Division for Planetary Sciences and the Meteoritical Society; Terrestrial Impacts: Chemistry and Mineralogy; Irons and Mesosiderites.

Thursday conference attendees will discuss Mars: Tectonics, Geophysics, Atmosphere and Exploration; Asteroids; Solar Nebula Physics and Chemistry; Lunar Highlands; Carbonaceous Chondrites; Outer Solar System; Impact Models and Experiments; Lunar Mare Basalts. Friday the conference will conclude with sessions on Planetary Geological Processes; Phobos; Remote Sensing and Instrumentation and N&S Isotopes; and Cosmic Rays and Solar Wind.

Registration begins at 6 p.m. Sunday at the Lunar and Planetary Institute and continues throughout the conference on the second floor of the Gilruth Center.

NOTE TO EDITORS: Press abstracts of papers presented during the conference are available from Kari Fluegel at the Johnson Space Center Media Services Office at (713) 483-5111.

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NASA News

National Aeronautics and
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For Release:

Pam Alloway
Release No. 91-023

April 2, 1991

NASA EXTENDS ROCKWELL STS OPERATIONS CONTRACT

NASA has extended its contract with Rockwell Space Operations Company (RSOC) to provide uninterrupted performance of the Space Transportation System Operations contract through Dec. 31, 2000.

The total estimated value of the extension is $2.3 billion. Total contract value, including all modifications, is $4.8 billion.

RSOC is based in Houston and the work covered in the contract is performed at the Johnson Space Center, Houston, and RSOC's building near the Center.

The cost-plus-award fee contract includes: the maintenance and operations of Shuttle facilities including, but not limited to, the Mission Control Center, crew trainers and simulators, flight design and crew activity planning systems, the Shuttle Avionics Integration Laboratory and the Shuttle benefitting portion of the Central Computing Facility; flight preparation activities, including flight planning and flight data generation orbiter software reconfiguration, simulation preparations and facilities reconfiguration; direct mission support (simulations and flight); and sustaining engineering support for the above activities.

- end -

NASA News

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For Release:

Mark Hess, Ed Campion
Headquarters, Washington, D.C.
(Phone: 202/453-8536)

April 5, 1991

RELEASE: 91-50

TEACHER-IN-SPACE FLIGHT DECISION DELAYED UNTIL 1992

NASA Administrator Richard H. Truly has decided, based on a recent policy review, that NASA's Space Flight Participant Program will be held in abeyance for another year. Under this program, NASA would provide space flight opportunities for persons outside the professional categories of NASA astronauts and payload specialists. NASA previously has indicated that when it resumes the program, the first priority will be given to a teacher in space in fulfillment of space education plans.

Truly made the decison based on the recommendation of a policy review committee of senior officals at NASA Headquarters. Following a meeting on April 1, the group expressed support for the Teacher-in-Space program. However, the group felt that it would be premature to reinitiate activities in 1991 because of the continuing backlog of high priority missions on the Shuttle manifest. A policy review on reinstatement of the program will be repeated early next year.

Christa McAuliffe, the first teacher in space, was part of the crew on the Space Shuttle Challenger which was lost on Jan. 28, 1986. Barbara Morgan, a teacher from McCall, Idaho, was named NASA's Teacher-in-Space designee in 1986 when she was chosen as the next space flight participant to fly on the Shuttle when the program resumes. Morgan has completed initial training and has maintained her proficiency.

- end -

NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
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For Release:

Barbara Schwartz
April 10, 1991

RELEASE NO. 91-029

ASTRONAUT GARDNER NAMED COMMANDANT USAF TEST PILOT SCHOOL

Col. Guy S. Gardner has been named Commandant of the USAF Test Pilot School at Edwards Air Force Base, California. He will leave the astronaut corps in June 1991 to assume his new position which is a part of the Air Force Systems Command.

Gardner was pilot on two Space Shuttle missions, STS-27 a Department of Defense flight aboard Orbiter Atlantis on December 2-6, 1988, and STS-35 ASTRO-1 astronomy laboratory aboard Orbiter Columbia on December 2-10, 1990. He has worked at NASA Johnson Space Center since his selection in May 1980.

After graduating from the Test Pilot School in 1975, Gardner served as a test pilot with the 6512th Test Squadron and then as an instructor test pilot at the Edwards facility.

"We are happy that Guy has this outstanding opportunity. Although we'll miss his expertise here, we will look forward to working with him in his new assignment." deputy director of Flight Crew Operations David Leestma said.

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NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
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For Release:
April 12, 1991

Barbara Schwartz
RELEASE NO. 91-031

NOTE TO EDITORS: STS-37 POSTFLIGHT CREW PRESS CONFERENCE

The STS-37 postflight crew press conference will be held Friday, April 19, 1991, at 9 a.m. CDT at the Johnson Space Center in building 2, room 135. News media are invited to participate on location at JSC or by two-way audio from other NASA centers.

The crew members will describe their recent flight which included the successful deployment of the Gamma Ray Observatory and the first spacewalk in more than five years. They will show and narrate film highlights of the mission activities.

The press conference will be broadcast on NASA Select television which is carried on RCA SATCOM F2R, transponder 13, located at 72 degrees west longitude.

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NASA News

National Aeronautics and
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For Release:

Barbara Schwartz
RELEASE NO. 91-032

April 19, 1991

SHUTTLE CREW ASSIGNMENTS ANNOUNCED

David C. Hilmers, Lt. Col., USMC, has been named mission specialist on STS-42, the International Microgravity Laboratory (IML-01) flight and Jerry L. Ross, Lt. Col., USAF, has been named Payload Commander for the Spacelab D-2 mission, STS-55.

IML-01 launch is scheduled for February 1992 and Hilmers will perform the duties previously assigned to the late Manley L. "Sonny" Carter. "It is with regret that I have to make this selection under these circumstances. We all miss Sonny Carter. He was a special person and friend who can never be replaced," Director of Flight Crew Operations Donald R. Puddy said.

Hilmers served as a mission specialist on three Shuttle flights, two of which were Department of Defense missions, STS- 51J and STS-36. He was one of five crew members on STS-26, the first flight after the Challenger accident, on which the crew successfully deployed NASA's Tracking and Data Relay Satellite.

STS-55, the second German Spacelab flight, is scheduled for February 1993. As Payload Commander, Ross will provide long-range leadership in the development and planning of payload crew science and training activities.

Ross has flown as a mission specialist on three Shuttle missions. On STS-61B, the crew deployed three communications satellites and Ross performed two 6-hour spacewalks to test Space Station construction techniques. Mission STS-27 was a Department of Defense flight. During STS-37, the Gamma Ray Observatory mission, Ross performed an unscheduled spacewalk to assist in the successful deployment of the observatory and a planned spacewalk to test potential maneuvering devices to help crew members move easily about the outside structure of Space Station Freedom.

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NASA News

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Lyndon B. Johnson Space Center
Houston, Texas 77058
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For Release:

Barbara Schwartz
RELEASE NO. 91-033

April 25, 1991

NOTE TO EDITORS: NEW SPACE SHUTTLE TO STOP IN HOUSTON

NASA's newest space shuttle, Endeavour, tentatively is scheduled to land at Houston's Ellington Field no earlier than noon, May 2 on its first ferry flight to Kennedy Space Center in Florida. News media and the public are invited to attend the arrival and a brief welcoming ceremony to be held as soon as possible after landing. The area around Hangar 990 will be open from an hour before the time of anticipated arrival until 10 p.m.

Among the participants at the ceremony will be Johnson Space Center Director Aaron Cohen and the astronaut flight crew for Endeavour's first mission, STS-49. Press information will be available in the JSC Newsroom or at the ceremony. News media requests for interviews at the ceremony should be made ahead of time by calling Barbara Schwartz, (713) 483-5111, before May 2.

There will be no reserved parking area for this event. Only television trucks with microwave equipment will be allowed through the gates by Hangar 990.

If the weather is unfavorable, this event may be rescheduled or cancelled. Please call the JSC Broadcast News Service at 483-8600 for updated information on this event.

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NASA News

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For Release:

Barbara Schwartz
Release NO. 91-035

May 2, 1991

ASTRONAUT MARY CLEAVE JOINS ENVIRONMENTAL PROJECT AT GODDARD

Astronaut Mary L. Cleave, Ph.D., P.E., will become Deputy Project Manager for SeaWiFS, Sea Viewing Wide Field Sensors, at NASA Goddard Spaceflight Center in Greenbelt, Maryland, beginning May 19, 1991.

SeaWiFS is a joint NASA and commercial project to learn about the biological mass in the ocean by studying the chlorophyll content to determine how much plankton is produced. Information on whether plants in the ocean can absorb enough carbon dioxide and produce necessary oxygen to prevent global warming will be one focal point for this research. An eight-channel visible camera for data collection will be launched using a Pegasus booster deployed from a an aircraft.

Cleave has flown on two Space Shuttle missions. During STS 61-B, three telecommunication satellites were deployed and two six-hour "spacewalks" were conducted to demonstrate Space Station Freedom construction techniques. Cleave controlled the Shuttle's robot arm to assist in these activities. On STS-30, crew members successfully deployed the Magellan Venus-exploration spacecraft and performed numerous middeck experiments.

"Earth observations experience I gained as an astronaut will be beneficial to me in this new capacity. I'm eager to have this opportunity to make a contribution to environmental research," Cleave said.

"We are sorry to see Mary leave JSC (Johnson Space Center) but are happy that she will stay in the NASA family. We wish her success in her new job," Director of Flight Crew Operations Donald R. Puddy said.

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NASA News

National Aeronautics and
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For Release:

Barbara Schwartz
Release NO. 91-036

May 2, 1991

NASA PREPARES FOR NEXT ROUND OF ASTRONAUT SELECTIONS

NASA conducts astronaut candidate selections on a two-year cycle and has scheduled the next class of candidates for July 1992. Interested individuals may apply until the cut-off date of July 1, 1991. Applications received after the deadline will be eligible for consideration in the next cycle.

After a six-month process which will include screening applications, interviews, and medical evaluations, selections will be announced early in 1992, and the new candidates will report to the Johnson Space Center in July. The limited number of selections to be made every two years is based on projected requirements.

There are two types of astronaut candidate positions--mission specialist and pilot. Successful pilot applicants typically have extensive piloting experience in high-performance jet aircraft and flight test experience. Successful applicants for the mission specialist positions typically have significant backgrounds in the sciences (materials science, earth science, medical science, and space science) or engineering. This year, because of the requirements of some future payloads and experiments, NASA is particularly interested in individuals with backgrounds in medical sciences research, microgravity research, and materials processing.

Applicants for the Astronaut Candidate Program must be citizens of the United States.

An application package may be obtained by writing to the following address:

NASA Johnson Space Center
Astronaut Selection Office
Attn: AHX
Houston, TX 77058

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NASA News
National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release:

Barbara Schwartz
RELEASE NO. 91-037F

May 5, 1991

SPACE SHUTTLE ENDEAVOUR AND SCA FLY TO STOP IN HOUSTON

The Space Shuttle Endeavour atop its 747 carrier aircraft is expected to stop over briefly Monday at Ellington Field in Houston on its way to the Kennedy Space Center, Florida. Endeavor will arrive in Houston at approximately 10 a.m. CDT and remain until 2 p.m. before flying on to Columbus AFB, Miss., where it will stay the night.

Endeavor is on a cross-country trek from the orbiter's assembly plant in California to KSC where it will be prepared for its first space flight in 1992.

Poor weather along the route has slowed the trip. The orbiter and 747 have made stops at Biggs Army Air Field near El Paso and Kelly Air Force Base in San Antonio. Endeavor spent Sunday night at Kelly AFB after flying in from El Paso Sunday afternoon.

# # #

NASA News

National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release:

Barbara Schwartz
RELEASE NO. 91-038

May 7, 1991

NOTE TO EDITORS: STS-39 POSTFLIGHT CREW PRESS CONFERENCE

The STS-39 postflight crew press conference will be held Friday, May 17, at 1:30 p.m. central time at the Johnson Space Center, building 2, room 135. News media are invited to participate on location at JSC or by two-way audio from other NASA centers.

The crew members will describe their recent Department of Defense flight and show film highlights of the mission activities.

The press conference will be broadcast on NASA Select television which is carried on RCA SATCOM F2R, transponder 13, located at 72 degrees west longitude.

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NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release:

Barbara Schwartz
RELEASE NO. 91-039

May 7, 1991

NOTE TO EDITORS: STS-40 PREFLIGHT BRIEFINGS

Preflight briefings on the Spacelab Life Sciences 1 flight, Space Shuttle mission STS-40, will be held May 14-15. On Tuesday, the briefings will originate from the Johnson Space Center, building 2, room 135, beginning at 1:30 p.m. CDT with a mission overview by lead flight director Al Pennington followed at 2:30 p.m. by the astronaut crew briefings. On Wednesday beginning at 9 a.m. CDT, the mission scientists will provide detailed information on the life sciences research to be conducted on this Spacelab mission. Wednesday's briefings will begin at Johnson Space Center and conclude at Kennedy Space Center.

News media may participate from these locations or by two-way audio from other NASA centers. The briefings will be carried on NASA Select television, Satcom F2R, transponder 13, at 72 degrees West longitude, frequency 3960.0 MHz, Audio 6.8 MHz.

Because of scheduling constraints, the flight crew will not have time for round-robin interviews, and the mission scientists will not be able to participate in additional briefings before the flight.

# # #

NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release:

Barbara Schwartz
RELEASE NO. 91-043

May 16, 1991

NOTE TO EDITORS: NEWSROOM SCHEDULE FOR UPCOMING SHUTTLE MISSION

The Spacelab Life Sciences-1 Mission, STS-40, is a nine-day flight dedicated to life sciences research and is scheduled to be launched on May 22, at 7 a.m. CDT. The Johnson Space Center Newsroom will be open on launch day from 5 a.m. until 7 p.m. CDT, and from 3:30 a.m. to 7 p.m. CDT for the remainder of the mission. This is a change from the usual 24-hour mission operation schedule.

The news media working area located in the Teague Auditorium will be open to reporters 24 hours a day, and television coverage of mission operations will be around the clock.

NASA Select programming will continue to be broadcast on a 24-hour schedule. Two special programs will be broadcast daily. "Today in Space" hosted by astronauts Bonnie Dunbar and Robert L. "Hoot" Gibson is scheduled for 2 p.m. CDT, and a mission status briefing is scheduled for 3 p.m. CDT. These programs are in addition to other television events such as flight deck, middeck, and Payload Operations Control Center activities. NASA Select can be accessed through GE Satcom F2R transponder 13. The frequency is 3960 MHz with a look angle of 72 degrees West longitude. Two-hour edited programs of each flight day's activities will be replayed for Hawaii and Alaska at 11 p.m. CDT on Spacenet 1, transponder 18. The look angle is 120 degrees West longitude, and a frequency of 4060.8 MHz. Audio is on 6.8 MHz.

This is the first Spacelab mission to be managed by Johnson Space Center. Principal human life sciences investigators will be at JSC during the mission operations. JSC personnel will direct Spacelab science activities from the Spacelab Mission Operations Control facility at the Marshall Space Flight Center in Huntsville, Alabama.

For more information on mission activities, please call the JSC newsroom at (713) 483-5111.

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NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
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For Release:

Pam Alloway
RELEASE NO. 91-044

May 24, 1991

SPRING PLANTING AND CROP HARVEST TIME UNDERWAY AT NASA

Spring is not only planting time at Johnson Space Center, Houston, it also is harvest time in the Engineering Directorate's Crew and Thermal Systems Division (CTSD). And the crop harvested will give scientists and engineers vital information that could impact human's self-sufficiency on the Moon and Mars.

CTSD scientists and engineers on May 30 will harvest their first research crop of Waldman's Green Lettuce grown in a specially outfitted chamber at Johnson. This crop follows the successful harvest of a test crop of lettuce in late February, that marked an important milestone in studies on Regenerative Life Support Systems (RLSS). These studies are focusing on recycling air and water and the production of food, all critical elements to NASA's future long duration missions.

CTSD personnel designed the test that ended with the February harvest to verify the new fully-automated RLSS test-bed plant growth chamber, its ability to operate at reduced atmospheric pressures that more closely duplicate lunar and martian habitat environments and whether it can grow crops from seed to harvest with minimal human intervention.

The crop in the RLSS test bed is grown in an array of 480 receptacles that contain a solid substrate medium irrigated with a standardized nutrient solution added via an automated irrigation system. The test bed was designed to grow enough plants to provide food for one person and air and drinking water for several people, said Wil Ellis, CTSD chief.

"We can control and monitor all environmental conditions essential to plant growth," said Don Henninger, RLSS chief scientist. "There are about 250 measurements obtained every hour."

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Samples of the chamber's atmosphere pass through a series of gas analyzers to measure and control the atmospheric composition. Outside the chamber are three large tanks in which excess oxygen produced by plants during photosynthesis is stored. Nearby, two other tanks hold carbon dioxide which is injected to meet plant photosynthesis requirements. Water transpired by the plants is collected, measured and analyzed.

Engineers and scientists have taken a multi-level approach to JSC's RLSS project. The project includes physical and chemical life support research, plant growth research and life sciences requirements, all of which contribute to a RLSS data base. Scientists and engineers will use this information to develop a human-rated RLSS test facility.

"The purpose of the regenerative life support system test bed is to gather data to provide information for designing similar systems for lunar and Mars' bases," said Ellis. "The four unique aspects of this regenerative life support test bed activity that JSC offers the agency are: a closed chamber; reduced pressure capability; integration of biological, physical, and chemical systems; and the ability to get direct engineering data to build a human-rated test facility."

A RLSS would make humans on a lunar or Mars outpost more self-sufficient and less dependent on resupplied expendables from Earth, Ellis said. The system would use plants and microbes in various bioregenerative processes to produce food and regenerate the outpost's air and water.

Ellis said it is likely a life support system for a lunar or Mars outpost will combine advanced biological, physical and chemical regenerative systems and current shuttle-type or proposed space station life support technologies. An initial outpost, not much larger than a spaceship, probably would use pumps, fans and filters similar to those found in the shuttle or the proposed space station life support system. Later, the outpost's life support system could evolve into progressively more complex systems with integrated physical, chemical and biological components.

Scientists and engineers working on this project are focusing research efforts on integrating a RLSS in preparation for eventual flight hardware development. Along with that effort is the need to identify areas where technology development is necessary to coordinate the integration and allow the systems to evolve together.

Scientists and engineers are in phase two of a four phase RLSS project. During this phase, they will add hydroponics to their growing regimen which now uses a solid substrate medium. By using a hydroponic system, plants will grow in a continuous flowing nutrient solution rather than a solid substrate. To complete the first phase, a lunar simulant will be used in the near future to grow lettuce in the growth chamber.

Scientists opted not to concentrate on hydroponics exclusively because the lunar soil has some unique characteristics. Synthetic soils called zedlites can be manufactured from lunar materials. The third phase will allow for the study of plant growth in sub-ambient total gas pressures, while the fourth phase will incorporate physical and chemical systems. The current study provides a baseline data set for system performance evaluations to be made in later phases of the project.

- end -

A 3 minute-11 second video clip, called Recycling In Space, is available from the Johnson Space Center Media Services Branch by calling (713) 483-5111.

NASA News

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Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release:

Barbara Schwartz
RELEASE NO. 91-047

May 30, 1991

ASTRONAUT LOUNGE TO LEAVE NASA

Astronaut John M. "Mike" Lounge will leave NASA June 21 to become Director of Houston Operations for SPACEHAB, Inc. SPACEHAB is providing a pressurized module to be flown in the orbiter's payload bay to augment NASA's ability to carry middeck experiments. It will fly on a series of Space Shuttle flights beginning in late 1992.

Lounge is currently Chief of the Space Station Support Office in the Flight Crew Operations Directorate, dealing with Space Station design and operation. Lounge was hired by JSC in 1978 as an engineer in the Payloads Operations Division. He was selected as an astronaut candidate in 1980.

Lounge has flown on three Shuttle missions: STS 51-I launched August 23, 1985; STS-26, September 29, 1988; and STS-35 December 2, 1990. During STS 51-I, Lounge deployed the Australian AUSSAT communications satellite and operated the Shuttle's robot arm while fellow crew members successfully repaired the SYNCOM IV-3 satellite. Two other communications satellites were deployed on this mission. On STS-26, the first flight to be flown after the Challenger accident, the crew successfully deployed NASA's Tracking and Data Relay Satellite (TDRS-C). Lounge was flight engineer on STS-35, ASTRO-1, which was dedicated to astronomical research.

"Mike has made many significant contributions to this organization and to the space program during his tenure. He will be missed by everyone. We wish him the best in his new position and look forward to working with him in this capacity," Director of Flight Crew Operations Donald R. Puddy said.

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Lounge provided the following statement regarding his decision to leave NASA:

"This is a very tough job to leave, but I feel that three flights is my fair share, and I'm ready for a new challenge.

"I remain completely dedicated to our long-term mission of the exploration and exploitation of Space. We are building the pyramids of our civilization, and it takes a huge team to get that done. I'm not leaving the team, I'm just changing positions.

"For the past several years I have been working on design and operations concepts for the Space Station Freedom. When I made my decision to leave NASA several months ago, I thought the Station program was finally in pretty good shape and could look forward to a period of stability and real design progress. I'm sorry to see such a vital project become embroiled in politics. The Station is a very important stone in this pyramid we are building.

"I'll always be inspired by the professionalism, the dedication, and the talent of the great NASA family."

# # #

NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release:

Kari Fluegel
RELEASE NO. 91-054

June 26, 1991

JSC SELECTS TAFT BROADCASTING FOR TV SUPPORT SERVICES

NASA has selected Taft Broadcasting Co. of Houston for final negotiations of a contract providing television support services for the Johnson Space Center, Houston.

The proposed cost-plus-award-fee contract, which begins Sept. 1, covers a 1-year basic performance period and four 1-year options, for 5 years total. The contract value totals about $40.4 million.

Services provided by the approximately 100 contract employees will include television operations in support of test and training facilities at JSC, television support for Shuttle missions, video productions, imagery management services, television engineering services and maintenance and repair of television systems and equipment at JSC.

-end-

NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release

Barbara Schwartz
RELEASE NO. 91-055

June 28, 1991
1 p.m. CDT

ASTRONAUT O'CONNOR TO LEAVE NASA

Astronaut Bryan D. O'Connor will leave NASA July 29 to become Commander of the Marine Air Detachment at the Naval Air Test Center, Patuxent River, Md., effective August 2. O'Connor is a colonel in the U.S. Marine Corps.

O'Connor has flown on two Space Shuttle missions. He was Commander on STS-40 Spacelab Life Sciences-1 mission, June 5-14, 1991, which was dedicated to life sciences research, and Pilot on Space Shuttle mission STS-61B launched Nov. 26, 1985, on which three communications satellites were deployed and two 6-hour "spacewalks" were conducted to demonstrate Space Station Freedom construction techniques.

In addition to his flight assignments, O'Connor has served in several key positions during his 11-year tenure at Johnson Space Center, Houston. O'Connor was Assistant to the Shuttle Program Manager from March 1986 until February 1988, Chairman of NASA's Space Flight Safety Panel from September 1986 to February 1989 and Deputy Director of Flight Crew Operations since August 1989.

"My career at NASA has been extremely rewarding. I return to the Marine Corps enriched by the experiences and friendships I've gained over these 11 years." O'Connor said.

"Bryan's outstanding contributions to the Shuttle Program, to the safety panel and to this directorate exemplify standards of excellence to which everyone should aspire. His leadership qualities will serve him well in his new assignment. We will miss him and wish him continued success.", Director of Flight Crew Operations Donald R. Puddy said.

end

NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release:

Kelly Humphries
RELEASE NO. 91-057

July 1, 1991

JSC GIVES EQUAL OPPORTUNITY TROPHY MONEY TO EDUCATION

Johnson Space Center will give $10,000 worth of videodisc equipment and calculators, purchased with NASA Equal Opportunity Trophy winnings, to area elementary schools.

Freda Marks, JSC's Deputy Director of Equal Opportunity Programs, said the money will be used to support President Bush's and NASA's educational initiative by helping generate the interest and enthusiasm of elementary school minority students in science and math.

Half of the money will be used to purchase videodisc players in support of the "Windows on Science" program and place them in 25 target elementary schools in need of the equipment. The curriculum program, approved by the Texas State Board of Education, provides coverage in English and Spanish of state-mandated content for elementary science education in grades one through six. Although the software can be provided by school districts with state funds, the hardware must be purchased with local funds.

JSC has identified 25 schools with primarily minority enrollment in the Pasadena, Texas City, Dickinson and LaMarque school districts that are without the necessary equipment.

The rest of the money will be used to purchase "Math Explorer" calculators for fourth and fifth grade classes in schools within the Houston Independent School District. The calculators support a Math Technology Program that has been approved by the National Council of Teachers of Mathematics. Research on calculator use indicates that its use promotes achievement, improves problem solving skills and increases understanding of mathematical concepts. JSC is working directly with HISD to identify appropriate schools.

-more-

JSC won the NASA Equal Opportunity Trophy, which carries with it a $10,000 stipend, in January. The committee that recommended the plan to return the money to the community was comprised of Marks, Gregory Hayes, Deputy Human Resources Director, and Dr. Robert Fitzmaurice, Center Education Programs Officer.

-end-

NASA News

National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
Houston, Texas 77058
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For Release:
July 3, 1991

Barbara Schwartz
RELEASE NO. 91-058

ASTRONAUT COATS TO LEAVE NASA

Astronaut Michael L. Coats will retire from the Navy and leave NASA Aug. 1 to become Director of Advanced Programs and Technical Planning at Loral in Houston. Coats is a captain in the Navy.

Coats was pilot on STS-41D launched Aug. 30, 1984, on which three satellites were deployed and the OAST-1 solar cell wing was tested. He was Commander of STS-29, a Tracking and Data Relay Satellite deployment mission, launched Mar. 13, 1989. He also commanded the crew of STS-39, the first unclassified Department of Defense flight, launched Apr. 28, 1991, on which the crew members worked around-the-clock in two-shift operations to deploy, operate and retrieve the SPAS-II spacecraft to gain research information on Shuttle engine firings. In addition to these flight assignments, Coats served as Acting Chief of the Astronaut Office from May 1989 to March 1990.

"My years at NASA have convinced me that the finest folks in the world are attracted to the space program. I am extremely pleased to be able to change career directions and still be involved with this wonderful group of people," Coats said.

"Mike has been an outstanding asset to the space program and his expertise will be missed. We are sorry to see him leave, but we are happy that we will be able to continue working with him in this new capacity," Director of Flight Crew Operations Donald R. Puddy said.

- end -

NASA News

National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release:

Barbara Schwartz
RELEASE NO. 91-060

July 11, 1991

NASA RETIRES SUPER GUPPY

"It's like a flying dinosaur," pilot Frank Marlow said. He was referring to the NASA 940 "Super Guppy," a whale-shaped cargo aircraft that is being retired.

Marlow and copilot Arthur "Ace" Beall flew the "Super Guppy" to Davis-Monthan AFB, Arizona, July 9, for long-term storage. Flight engineers on the trip were Chuck Gillespie and Henry Marshall.

The outsized aircraft presents unique flying challenges for the crew. Because of its shape, the Guppy lands differently from most aircraft in that its nose gear touches down first and its nose gear leaves the runway last during takeoff.

The "Super Guppy" is being retired because it needs four new engines, and this requires strengthening the wings at a total cost of 6-10 million dollars.

The "Super Guppy," a highly modified Boeing KC-97, was purchased by NASA in 1979 from Aero Spacelines, Inc., in Santa Barbara, California, for $2.8 million. It was specifically designed for carrying outsized cargoes such as the S-IVB stage of the Saturn V launch vehicle and the Lunar Excursion Module Adapter for the Apollo Program. It is the world's largest aircraft in terms of cubic capacity.

"It was a bargain," Marlow said. He was referring to the original cost as well as the benefits derived from being able to use the "Super Guppy" to carry more than 2 million pounds of NASA cargo during its dozen years of service.

Marlow said Dr. Werner von Braun, one of the pioneers of modern rocketry and Director of Marshall Space Flight Center at that time, was one of the first people to fly in the "Super Guppy."

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NASA has used the aircraft mainly for Shuttle cargo transportation, including the Hubble Space Telescope, Syncom satellites, Atlas-Centaur boosters, solid rocket booster aft skirts, and Shuttle orbital maneuvering system pods. Some of the other items transported were parts for Langley's National Transonic Facility, full-scale training equipment for use in the Weightless Environment Training Facility (WETF) at JSC, and F-14's for the Navy.

"We hate to lose this unique vehicle, but today our budget will not permit us to maintain the aircraft in a safe, flyable condition. In the future we will use specially modified Air Force C-5A's to transport Shuttle and Space Station equipment," director of Flight Crew Operations Donald R. Puddy said.

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NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
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For Release:

Barbara Schwartz
RELEASE NO. 91-062

July 18, 1991

NOTE TO EDITORS: NEWSROOM HOURS FOR SPACE SHUTTLE MISSION STS-43

Space Shuttle Mission STS-43, a nine-day flight to deploy a Tracking and Data Relay Satellite (TDRS) and to obtain data from a number of other payloads, is scheduled for launch at 9:54 a.m. CDT July 23.

The Johnson Space Center Newsroom will be open on launch day from 6 a.m. until approximately 9 p.m. or until after the TDRS post-deploy press conference scheduled for 8:30 p.m.

For the duration of the mission, the newsroom hours will be from 4 a.m. until 6 p.m. daily. The news media working area located in the Teague Auditorium will be open to reporters during newsroom hours or by special arrangement.

On landing day the newsroom will be open from 4 a.m. until the flight crew returns to Ellington Field.

Except for launch day, a single daily mission status briefing will be held with Flight Director Phil Engelauf. There will be no briefing at the change of each shift. The briefing schedule is:

July 23	1:25 p.m. (Ron Dittemore) and 8:30 p.m. (Rob Kelso)
July 24	noon
July 25	noon
July 26	10 a.m.
July 27	10 a.m.
July 28	9:30 a.m.
July 29	9:30 a.m.
July 30	9:30 a.m.
July 31	9:30 a.m.

This schedule may be revised during the mission or other briefings added as mission activities warrant.

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Around-the-clock television coverage of the flight with mission commentary will be carried on NASA Select television. NASA Select can be accessed through GE Satcom F2R, transponder 13, frequency 3960 MHz, and an orbital position of 72 degrees West longitude. An edited version of each flight day's activities will be replayed for Hawaii and Alaska at 11 p.m. CDT on Spacenet 1, transponder 18, frequency 4060.8 MHz, and an orbital position of 120 degrees West longitude, except July 25 when the program will be broadcast from 1:30 to 3:30 a.m. CDT. Audio is on 6.8 MHz.

For more information on mission events or this schedule, please call the JSC Newsroom at 713-483-5111.

# # #

NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release:

Barbara Schwartz
RELEASE NO. 91-067

August 8, 1991

SHUTTLE MISSION STS-48 BRIEFINGS SET FOR AUGUST 15

A series of preflight briefings on Space Shuttle mission STS-48 will be held Aug. 15. The briefings will begin with a mission overview by Lead Flight Director Al Pennington at 8 a.m. CDT, originating from the Johnson Space Center, Houston, Building 2, Room 135. The primary payload briefing on the Upper Atmosphere Research Satellite will be held from 9 to 11 a.m. CDT and will originate from Goddard Space Flight Center, Greenbelt, Md. Returning to JSC at 11 a.m., the Protein Crystal Growth will be briefed, followed by Investigations into Polymer Membrane Processing at 11:30 p.m. There will be a 30-minute lunch break from noon to 12:30 p.m.

The briefings will resume with Middeck "0" Gravity Dynamics Experiment at 12:30 p.m., Physiological and Anatomical Rodent Experiment at 1 p.m., Color Laser Imaging at 1:30 p.m., and the astronaut crew briefing at 2 p.m. The crew will be available for round robin interviews after the briefings. Media representatives wishing to participate in the interviews should notify the JSC newsroom by the afternoon of Aug. 13.

STS-43 POST FLIGHT CREW PRESS CONFERENCE SET FOR AUGUST 21

The STS-43 postflight crew press conference will be held Wed., Aug. 21, at 10 a.m. CDT at the Johnson Space Center, Houston, in Building 2, Room 135. The crew members will describe their flight while narrating film highlights of the mission, including the successful deployment of a Tracking and Data Relay Satellite and scientific experiments performed.

Both the briefings and the conference will be carried on NASA Select television with two-way audio for questions and answers from other NASA centers and Headquarters. NASA Select programming is carried on Satcom F2R, transponder 13, located at 72 degrees west longitude.

- end -

NASA News

National Aeronautics and
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For Release:

NOTE TO EDITORS: CORRECTION TO NEWS RELEASE 91-067

The STS-48 briefing scheduled for Aug. 15 at 1:30 p.m. should be titled DTO 648 Electronic Still Photography. It was incorrectly called Color Laser Imaging which is only one part of the experiment.

NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release:

Mark Hess
Headquarters, Washington, D.C.
(Phone: 202/453-4164)

August 20, 1991

Ed Campion
Headquarters, Washington, D.C.
(Phone: 202/453-1134)

RELEASE: 91-132

NASA RELEASES MIXED FLEET MANIFEST

NASA today issued its semi-annual Payload Flight Assignments - NASA Mixed Fleet Manifest, providing the latest schedules for payloads to fly on the Space Shuttle and on expendable launch vehicles (ELVs). The last manifest was published in February 1991 and modified in March.

The sequence for near term Shuttle flights is identical to the March update, with some minor adjustments to schedule. The Shuttle schedule for the remainder of 1991 has the Upper Atmosphere Research Satellite mission (STS-49) being accelerated to September 1991 and the Defense Support Program (STS-44) planned in December.

In 1992, 8 Shuttle missions are planned. International Microgravity Laboratory-1 (STS-42) will lead off the year, followed by Atlas-1 (STS-45), the Intelsat Reboost mission (STS-49), U.S. Microgravity Laboratory-1 (STS-50), Tether Satellite System/European Retrievable Carrier-1 (STS-46), Spacelab J (STS-47), Laser Geodynamics Satellite II/U.S. Microgravity Payload/CANEX-2 (STS-52), and a DOD mission (STS-53).

Highlights in 1992 will include the first flight of the Shuttle Endeavour on STS-49 and the return of orbiter Columbia to flight status on STS-50 which is planned to be the first 13-day extended duration mission of the Shuttle program. Several missions in 1992 will feature international collaboration and flights of foreign payload specialists including a European and a Canadian on STS-42, an Italian on STS-46, a Japanese on STS-47 and a Canadian on STS-52.

- more -

Astro-2 has been added to the manifest in September 1994. This August manifest projects out through Fiscal Year 1997, which ends September 1997. Among the missions planned in that time frame are Shuttle assembly and utilization flights to complete the man tended configuration of the Freedom space station and to begin using the facility, a second visit to the Hubble Space Telescope, Atlas-5, Spacelab E-2 and Spacehab-8/U.S. Microgravity Payload-8.

Two ELV launches remain in 1991-- the NOAA-I weather satellite on an Atlas E rocket and the Extreme Ultraviolet Explorer on a Delta II vehicle. Five ELV launches are planned in 1992, including the joint U.S.-Japan Geotail mission in July and the Mars Observer in September. The Expendable Launch Vehicle manifest has been modified by the delay of the GOES I/J missions to December 1992 and August 1993, respectively. The ELV manifest now includes flights through September 1997 (FY 1997).

- end -

EDITORS NOTE: A copy of the Mixed Fleet Manifest is available to media representatives in the various NASA newsrooms.

NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
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For Release:

Barbara Schwartz
RELEASE NO. 91-069

August 23, 1991

NASA ANNOUNCES CREW MEMBERS FOR FUTURE SHUTTLE FLIGHTS

NASA today announced crew members and changes to crew assignments for eight future Space Shuttle missions.

The STS-50 U.S. Microgravity Laboratory mission, scheduled for May 1992, is a complement of microgravity materials processing technology experiments to be flown on the first extended duration orbiter mission aboard Columbia. The 13-day flight will be the longest Shuttle mission to date. Crew members are:

Richard N. Richards, Capt. U.S. Navy, Commander
Kenneth D. Bowersox, Lt. Cdr. U.S. Navy, Pilot
Carl J. Meade, Lt. Col. U.S. Air Force, Mission Specialist
Ellen S. Baker, M.D., Mission Specialist
Bonnie J. Dunbar, Ph.D., Payload Commander
Lawrence J. DeLucas, Ph.D., University of Alabama, Payload Specialist
Eugene H. Trinh, Ph.D., Jet Propulsion Laboratory, Payload Specialist

Baker is an addition to this crew which was named earlier. Bowersox, a pilot astronaut previously assigned as a mission specialist, is reassigned as pilot in place of John H. Casper who has been named commander of STS-54.

Baker, 38, born in Fayetteville, N.C., was selected in 1984. She flew on STS-34. She has a B.A. in geology from the State University of New York at Buffalo and an M.D. from Cornell University.

- more -

The STS-46 Tethered Satellite Systems mission, scheduled for June 1992, features a satellite to be deployed from the orbiter payload bay on a 12-mile tether to collect electrodynamic data in the upper reaches of the Earth's atmosphere. Also, the European Retrievable Carrier, a free-flying reusable platform dedicated to materials science and life science experiments, will be deployed. Crew members are:

Loren J. Shriver, Col. U.S. Air Force, Commander
Andrew M. Allen, Maj. U.S. Marine Corps, Pilot
Franklin Chang-Diaz, Ph.D., Mission Specialist
Claude Nicollier, European Space Agency Astronaut, Mission Specialist
Marsha S. Ivins, Mission Specialist
Jeffrey A. Hoffman, Ph.D., Payload Commander
(An Italian payload specialist will be named.)

Ivins is an addition to this crew announced earlier. Allen, a pilot astronaut, previously had been assigned as a mission specialist, but is reassigned as pilot in place of James D. Wetherbee who is named as commander of STS-52.

Ivins, 40, born in Baltimore, Md., was selected in 1984. She flew as a mission specialist on STS-32 and has a B.S. in aerospace engineering from the University of Colorado.

STS-47 Spacelab J mission is scheduled for August 1992. Spacelab J is a joint mission with the Japanese Space Agency and is dedicated to materials processing and life science experiments. Crew members are:

Robert L. Gibson, Capt. U.S. Navy, Commander
Curtis L. Brown, Jr., Maj. U.S. Air Force, Pilot
N. Jan Davis, Ph.D., Mission Specialist
Jerome Apt, Ph.D., Mission Specialist
Mae C. Jemison, M.D., Science Mission Specialist
Mark C. Lee, Lt. Col. U.S. Air Force, Payload Commander
Mamoru Mohri, Ph.D., NASDA (Japan) Payload Specialist

Lee, Davis, Jemison, and Mohri were assigned to this mission earlier.

Gibson, 44, born in Cooperstown, N.Y., was selected in 1978. He was pilot on STS 41-B and commander on STS 61-C and STS-27. He has a B.S. in aeronautical engineering from the California Polytechnic Institute.

Brown, 35, born in Elizabethtown, N.C., was selected in 1987. This is his first Shuttle flight. He has a B.S. in electrical engineering from the U.S. Air Force Academy.

Apt, 42, considers Pittsburgh, Penn., his hometown. Selected in 1985, he flew as a mission specialist on STS-37. He has a B.A. in physics from Harvard University and a Ph.D. in physics from the Massachusetts Institute of Technology.

STS-52 Laser Geodynamics Satellite II, scheduled for launch in September 1992, is a spherical satellite covered with retroflectors which will be illuminated by ground-based lasers to determine precise measurements of the Earth's crustal movements. Crew members are:

James D. Wetherbee, Cdr. U.S. Navy, Commander
Michael A. Baker, Cdr. U.S. Navy, Pilot
William M. Shepherd, Capt. U.S. Navy, Mission Specialist
Tamara E. Jernigan, Ph.D., Mission Specialist
Charles Lacy Veach, Mission Specialist

Wetherbee, 38, born in Flushing, N.Y., was selected in 1984. He was pilot on STS-32 and has a B.S. in aerospace engineering from the University of Notre Dame.

Baker, 37, considers Lemoore, Calif., his hometown. Selected in 1985, he was pilot on STS-43 and has a B.S. in aerospace engineering from the University of Texas.

Shepherd, 42, considers Phoenix, Ariz., his hometown. Selected in 1984, he was a mission specialist on STS-27 and STS-41. He has a B.S. in aerospace engineering from the U.S. Naval Academy and a degree in ocean engineering and an M.S. in mechanical engineering from the Massachusetts Institute of Technology.

Jernigan, 32, born in Chattanooga, Tenn., was selected in 1985. She was a mission specialist on STS-40. She has a B.S. in physics and an M.S. in engineering science from Stanford University, an M.S. in astronomy from the University of California at Berkeley and a Ph.D. in space physics and astronomy from Rice University.

Veach, 46, considers Honolulu his hometown. Selected in 1984, he was a mission specialist on STS-39. He has a B.S. in engineering management from the U.S. Air Force Academy.

STS-53 Department of Defense-1 mission launch is scheduled in Oct. 1992. Crew members are:

David M. Walker, Capt. U.S. Navy, Commander
Robert D. Cabana, Lt. Col. U.S. Marine Corps, Pilot
Guion S. Bluford, Col. U.S. Air Force, Mission Specialist
James S. Voss, Lt. Col. U.S. Army, Mission Specialist
Michael R. U. Clifford, Maj. U.S. Army, Mission Specialist

Walker, 47, considers Eustis, Fla., his hometown. Selected in 1978, he was pilot on STS-51A and commander on STS-30. He has a B.S. degree from the U.S. Naval Academy.

Cabana, 42, born in Minneapolis, Minn., was selected in 1985. He piloted STS-41 and has a B.S. in mathematics from the U.S. Naval Academy.

Bluford, 49, born in Philadelphia, Penn., was selected in 1978. He was a mission specialist on STS-8, STS-61A and STS-39. He has a B.S. in aerospace engineering from Pennsylvania State University and an M.S. and Ph.D. in aerospace engineering from the Air Force Institute of Technology.

Voss, 42, considers Opelika, Ala., his hometown. Selected in 1987, he will be a mission specialist on STS-44 in Nov. 1991. He has a B.S. in aerospace engineering from Auburn University and an M.S. in aerospace engineering sciences from the University of Colorado.

Clifford, 38, considers Ogden, Utah, his hometown. Selected in 1990, this is his first Shuttle flight. He has a B.S. in basic science from the U.S. Military Academy and an M.S. in aerospace engineering from the Georgia Institute of Technology.

STS-54 Tracking and Data Relay Satellite-F, scheduled for Nov. 1992, is a NASA satellite to provide communications for spacecraft in orbit around the Earth. Crew members are:

John H. Casper, Col. U.S. Air Force, Commander
Donald R. McMonagle, Lt. Col. U.S. Air Force, Pilot
Gregory J. Harbaugh, Mission Specialist
Mario Runco, Jr., Lt. Cdr., U.S. Navy, Mission Specialist
Susan J. Helms, Capt. U.S. Air Force, Mission Specialist

Casper, 48, considers Gainesville, Ga., his hometown. Selected in 1984, he flew as pilot on STS-36. He has a B.S. in engineering science from the U.S. Air Force Academy and an M.S. in astronautics from Purdue University.

- more -

McMonagle, 39, born in Flint, Mich., was selected as a pilot in 1987. He was a mission specialist on STS-39. He has a B.S. in astronautical engineering from the U.S. Air Force Academy and an M.S. in mechanical engineering from the California State University in Fresno.

Harbaugh, 35, considers Willoughby, Ohio, his hometown. Selected in 1987, he flew as a mission specialist on STS-39. He has a B.S. in aeronautical and astronautical engineering from Purdue University and an M.S. in physical science from the University of Houston-Clear Lake.

Runco, 39, considers Yonkers, N.Y., his hometown. Selected in 1987, he is scheduled as a mission specialist on STS-44 in Nov. 1991. He has a B.S. in meteorology and physical oceanography from City College of New York and an M.S. in meteorology from Rutgers University.

Helms, 33, considers Portland, Ore., her hometown. Selected in 1990, this is her first Shuttle flight. She has a B.S. in aerospace engineering from the U.S. Air Force Academy and an M.S. in aeronautics and astronautics from Stanford University.

STS-55 Spacelab-D2 is scheduled for Jan. 1993 to perform microgravity research and technology preparation for Space Station use. Robotics, galactic photography, and Earth observations will be part of this mission. Named are:

Jerry L. Ross, Lt. Col. U.S. Air Force, Payload Commander
Bernard A. Harris, Jr., M.D., Mission Specialist
(The German Space Agency will name two payload specialists.)

Jerry L. Ross, Lt. Col. U.S. Air Force, Payload Commander was assigned earlier.

Harris, 35, born in Temple, Texas, was selected in 1990. This is his first Shuttle flight. He has a B.S. in biology from the University of Houston and an M.D. from Texas Tech University.

STS-60 Space Radar Laboratory is scheduled for July 1993 to acquire radar images of the Earth's surface to be used for making maps, interpreting geological features, and resources studies. Named is:

Linda M. Godwin, Ph.D., Payload Commander

Godwin, 39, born in Cape Girardeau, Mo., was selected in 1985. She was a mission specialist on STS-37. She has a B.S. in mathematics and physics from Southeast Missouri State University and an M.S. and Ph.D. in physics from the University of Missouri.

Biographical information on previously named crew members follows:

STS-50

Richards, 44, considers St. Louis, Missouri, his hometown. Selected in 1980, he flew as pilot on STS-28 and commander on STS-41. He has a B.S. in chemical engineering from the University of Missouri and an M.S. in aeronautical systems from the University of West Florida.

Dunbar, 42, born in Sunnyside, Washington, was selected in 1980. She flew as a mission specialist on STS 61-A and STS-32. She has a B.S. and an M.S. in ceramic engineering from the University of Washington and a Ph.D. in biomedical engineering from the University of Houston.

Bowersox, 35, considers Bedford, Indiana, his hometown. Selected in 1987, this is his first Shuttle flight. He has a B.S. in aerospace engineering from the U.S. Naval Academy and an M.S. in mechanical engineering from Columbia University.

Meade, 41, was born at Chanute Air Force Base, Illinois. Selected in 1985, he flew on STS-38. He has a B.S. in electronics engineering from the University of Texas and an M.S. in electronics engineering from the California Institute of Technology.

STS-46

Shriver, 46, considers Paton, Iowa, his hometown. Selected in 1978, he flew as pilot on STS 51-C and as commander on STS-31. He has a B.S. in aeronautical engineering from the U.S. Air Force Academy and an M.S. in astronautical engineering from Purdue University.

Hoffman, 46, considers Scarsdale, New York, his hometown. Selected in 1978, he was a mission specialist on STS 51-D and STS-35. He has a B.A. in astronomy from Amherst College, an M.S. in materials science from Rice University, and a Ph.D. in astrophysics from Harvard University.

Allen, 36, born in Philadelphia, Pennsylvania, was selected in 1987. This is his first Shuttle flight. He has a B.S. in mechanical engineering from Villanova University.

Chang-Diaz, 41, born in San Jose, Costa Rica, was selected in 1980. He flew as a mission specialist on STS-61-C and STS-34. He has a B.S. in mechanical engineering from the University of Connecticut and a Ph.D. in applied plasma physics from the Massachusetts Institute of Technology.

STS-47

Lee, 39, born in Viroqua, Wisconsin, was selected in 1984. He was a mission specialist on STS-30. He has a B.S. in civil engineering from the U.S. Air Force Academy and an M.S. in mechanical engineering from the Massachusetts Institute of Technology.

Davis, 37, considers Huntsville, Alabama, her hometown. Selected in 1987, this will be her first Shuttle flight. She has a B.S. in applied biology from the Georgia Institute of Technology, a B.S. in mechanical engineering from Auburn University, and an M.S. and Ph.D. in mechanical engineering from the University of Alabama in Huntsville.

Jemison, 34, considers Chicago, Illinois, her hometown. Selected in 1987, this is her first Shuttle mission. She has a B.S. in chemical engineering from Stanford University and an M.D. from Cornell University.

STS-55

Ross, 43, born in Crown Point, Indiana, was selected in 1980. He flew as a mission specialist on STS 61-B, STS-27 and STS-37. He has a B.S. and an M.S. in mechanical engineering from Purdue University.

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NASA News
National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release:

David Garrett
Headquarters, Washington, D.C.
(Phone: 202/453-8400)

August 23, 1991

RELEASE: 91-138

NASA AA FOR HUMAN RESOURCES AND EDUCATION APPOINTED

NASA Administrator Richard H. Truly announced today the selection of Lieutenant General Spence (Sam) M. Armstrong , USAF (Ret.), for the newly established position of Associate Administrator for Human Resources and Education.

Armstrong is a native of Columbia, Tenn. He is a 1956 graduate of the U.S. Naval Academy, where he received a B.S. in Engineering. He earned a M.S. in Astronautical Engineering and a M.S. in Instrumentation Engineering, both from the University of Michigan. In addition, he attended Columbia University's Executive Program in Business Administration and the Senior Managers in Government program at Harvard University.

In April 1990, Armstrong retired from the U.S. Air Force after nearly 34 years of service. His last assignment with the Air Force was Vice Commander, U.S. Air Force Systems Command. Prior to that, he held such notable positions as Vice Commander-in-Chief, USAF Military Airlift Command; Chief, U.S. Military Training Mission to Saudi Arabia, the U.S. Central Command; and Commander, Air Force Military Training Center at Randolph Air Force Base, Texas. Following retirement, he served as Director, Program Architecture for the Synthesis Group, in support of the President's Space Exploration Initiative.

Truly said, "This new Associate Administrator will be responsible for developing NASA's human resources strategic plan and for furthering NASA's emphasis on national education goals. I feel very fortunate to have the opportunity to appoint an individual with the extensive qualifications of General Armstrong to this very important position."

- end -

NASA News

National Aeronautics and
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For Release:

David Garrett
Headquarters, Washington, D.C.
(Phone: 202/453-8400)

August 23, 1991

RELEASE: 91-139

NASA ASSOCIATE ADMINISTRATOR FOR EXPLORATION APPOINTED

NASA Administrator Richard H. Truly announced today the selection of Dr. Michael D. Griffin for the newly established position of Associate Administrator for Exploration. In this position, he will provide direction, integration and oversight of activities involving NASA exploration goals, including program, technical and fiscal management for matters relating to the Office of Exploration.

Griffin is currently the Deputy for Technology, Strategic Defense Initiative Organization (SDIO), U.S. Department of Defense, responsible for all technical research within the program. Prior to his current position, he played a key role in defining and technically directing the SDIO "Delta series" of space missions for which he was awarded the Defense Department's Distinguished Public Service Medal.

He also has worked at NASA's Jet Propulsion Laboratory, Pasadena, Calif., participating in advanced studies on the Mars Sample Return and Mars Rover programs. His earlier work also included experience in spacecraft mission operations at NASA's Goddard Space Flight Center, Greenbelt, Md.

Griffin received his B.A. in Physics from Johns Hopkins University and holds Master's degrees in Aerospace Science from Catholic University, in Electrical Engineering from the University of Southern California, in Applied Physics from Johns Hopkins University and in Business Administration from Loyola College of Maryland. He received his Ph.D. in Aerospace Engineering from the University of Maryland and is a registered professional engineer in Maryland and California.

In announcing the selection, Truly said, "NASA is very fortunate to have Mike Griffin on the NASA team. He brings a wealth of knowledge, experience and dedication that will be instrumental in leading NASA's efforts to expand exploration beyond Earth orbit into the solar system."

- end -

NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release:

Barbara Schwartz
RELEASE NO. 91-071

September 4, 1991

NOTE TO EDITORS: NEWSROOM HOURS FOR SPACE SHUTTLE MISSION STS-48

The newsroom at the Johnson Space Center will be open 24-hours a day throughout Space Shuttle Mission STS-48 which is scheduled to launch Sept. 12 at 5:57 p.m. CDT and land Sept. 18 at 12:55 a.m. CDT.

The main purpose of this flight is to deploy an Upper Atmosphere Research Satellite (UARS) to study the Earth's upper reaches, including ozone depletion. The flight crew's workday during this mission will be from early afternoon until early morning.

On the morning following the launch there will be a UARS activation briefing with flight director Rob Kelso at 5:30 a.m. CDT. After that, a single mission status briefing will be held with flight director Al Pennington at 1 a.m. daily. There will be no briefing at the change of each shift; however, this schedule may be revised during the mission as activities warrant.

Television coverage of the flight will be carried on NASA Select television. NASA Select can be accessed through GE Satcom F2R, transponder 13, frequency 3960 MHz, and an orbital position of 72 degrees West longitude.

An edited version of each flight day's activities will be replayed for Hawaii and Alaska twice daily at 11 a.m. and shortly before the crew sleep period begins on Spacenet 1, transponder 18, frequency 4060.8 MHz, and an orbital position of 120 degrees West longitudy.

For more information on mission events, call the JSC Newsroom at 713-483-5111.

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NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release:

Mark Hess
Headquarters, Washington, D.C.
(Phone: 202/453-4164)

September 13, 1991

RELEASE: 91-148

NEW OFFICE OF SPACE FLIGHT DEVELOPMENT ANNOUNCED

NASA Administrator Richard H. Truly today announced plans to create a new Office of Space Flight Development. The new development organization will have responsibility for Space Station Freedom development; large propulsion systems development, including the new National Launch System and its new space transportation main engine; other large space flight developments; and the advanced transportation systems program planning function.

"As a result of this organizational change, NASA's existing Office of Space Flight will be able to devote undivided attention to the safety and efficiency of space flight operation," Truly said. The office will retain responsibility for the Space Shuttle program, Space Station Freedom/Spacelab operations and utilization, expendable launch vehicle operations and upper stages. This office also will be charged with the responsibility to establish operational requirements for new capability development projects undertaken by the new Office of Space Flight Development. Institutional reporting of NASA Field Centers will remain unchanged.

Detailed definition of the new development organization and appointment of the Associate Administrator will be completed in the coming weeks.

The decision to create the new office was shared with former Chairman Norman Augustine and the individuals who served on the Advisory Committee on the Future of the U.S. Space Program, gathered at the Kennedy Space Center, Fla.

- end -

NASA News

National Aeronautics and
Space Administration
Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release:

Barbara Schwartz
RELEASE NO. 91-072

September 18, 1991

NOTE TO EDITORS: STS-48 POSTFLIGHT CREW PRESS CONFERENCE

The Shuttle mission STS-48 postflight crew press conference will be held Friday, Sept. 27, 1991, 10 a.m. CDT at the Johnson Space Center, Houston, building 2, room 135. News media may participate there or by two-way audio from other NASA Centers and Headquarters.

The crew members will narrate film highlights of the mission, including the successful deployment of the Upper Atmosphere Research Satellite (UARS) to study ozone depletion and middeck experiments to gain information for use in Space Station Freedom development.

The press conference will be broadcast on NASA Select television which is carried on Satcom F2R, transponder 13, frequency 3960 MHz, and an orbital position of 72 degrees West longitude.

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NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
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For Release:

Paula Cleggett-Haleim
Headquarters, Washington D.C.
(Phone: 202/453-1547)

September 19, 1991

Kari Fluegel
Johnson Space Center, Houston, Texas
(Phone: 713/483-5111)

Jane Hutchison
Ames Research Center, Mountain View, Calif.
(Phone: 415/604-4968)

RELEASE: 91-150

EARLY RESULTS FROM LIFE SCIENCES MISSION SHOW NEW DISCOVERIES

Scientists reporting preliminary results from the Spacelab Life Sciences-1 mission, flown last June, say strong scientific discoveries are forthcoming. Already indications are that the 9-day mission has provided new technology, offered first-time direct measurements and validated ground-based models. The findings are relevant to the health of spaceflight crews as well as important clinical problems.

"The mission has exceeded our expectations. Although the results are preliminary, there is significant, new information that is changing our understanding of how humans adapt to spaceflight," said Dr. Arnauld Nicogossian, Director of NASA's Life Sciences Division.

Highlighted below are preliminary findings of SLS-1 experiments, which involved interrelated studies of human and animal adaptation to space.

Consistent with findings from similar experiments, white blood cell responsiveness, which helps the body fight infections, decreased. However scientists observed that function can be increased two-fold with the use of microcarriers--small glass beads that promote cell interaction, which is essential for normal functioning.

- more -

Preliminary results from the blood volume study show that within the first 24 hours of space flight, the volume of blood decreases by more than 10 percent in astronauts. The redistribution of blood that occurs during spaceflight causes the blood volume to be less than optimal upon return to Earth. Readaptation results from an increase in plasma volume over several hours and red blood cell mass over a few days.

Astronauts have a reduced red blood cell mass after exposure to space. Various hypotheses have been made to account for this reduction, but they remain unproven.

For the first time the kidney's role in compensating for weightlessness was studied. Preliminary analysis shows very early changes occur in body compartment analysis and hormone results. Scientists say the importance of the renal involvement in blood volume and pressure control must now be considered in the assessment of the health status of spaceflight crews.

Direct and continuous measurement of central venous pressure using a cathetor produced unexpected results that suggested that much of the cardiovascular adaptation to space occurs on the launch pad and during launch.

The lung function was thought to be gravity-dependent; that is on Earth, the air flow goes more to the upper lung with blood flow greater at the bottom. Scientists expected that this imbalance would disappear in a weightless environment. However, it was retained in space. The inference is that the distribution of air and blood flow is not gravity dependent; scientists will have to look for other explanations to this phenomena.

Other studies demonstrated that decreased responsiveness of the blood vessels may contribute to cardiovascular deconditioning.

The jellyfish, flown for the first time, metamorphosed from one form--polyps--to another--ephyrae--in space. Both ephyrae which formed on earth and those that formed in space could pulse and swim. Space-formed jellyfish and ground-based controls are being studied in detail to determine whether there are differences in their structure or behavior.

Preliminary results from studying gravity receptors, which help people orient their bodies, indicated that they are well organized to adapt to space.

- more -

Preliminary findings indicate that both ground control and flight rats gained the same amount of weight. Bone length in both groups was comparable, although differences in the cranium were noted. It also appears that while the bone continued to grow and add mineral in the flight group, the bone strength is less than would be predicted by mass and mineral content.

Early analysis of samples from four crewmembers indicated increased calcium excretion and bone mineral loss.

Muscles showed a significant decrease in muscle mass resulting from exposure to weightlessness, an indication of muscle fiber atrophy. In addition, there was a reduction in the use of certain fatty acids as a usable energy source. These changes reflect the reduced gravity load and may impair the ability of a muscle to perform normally.

SLS-1 scientists will continue to review data collected during the mission. Detailed written reports will be produced by mid-1992 and the SLS-1 investigations will be continued in the upcoming SLS-2 mission, scheduled for mid-1993.

The Spacelab Life Sciences-1 mission is managed by the NASA Johnson Space Center for the Office of Space Science and Applications.

- end -

NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
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For Release:

Pam Alloway
RELEASE NO. 91-073

September 24, 1991

NASA AWARDS OPERATIONS AUTOMATIC DATA PROCESSING CONTRACT

NASA's Johnson Space Center, Houston, has awarded the Operations Automatic Data Processing contract to IBM Federal Sector Division, Houston. The 13-year contract provides for as many as 48 ground based mission operations main frame computer systems, peripheral equipment and services.

The contract, awarded Sept. 20, is a firm-fixed price, indefinite delivery/indefinite quantity contract which consists of a basic 8-year performance period with five additional 1-year options.

During the initial eight-year period, the U.S. Government can issue delivery orders for hardware, system software, services and maintenance up to maximum quantities specified in the contract. The five additional one-year options are only for hardware and system software maintenance.

Because of its indefinite delivery/indefinite quantity feature, the value of the OADP contract will depend upon the number and type of systems, equipment and services which NASA orders. It is anticipated that about $191 million in delivery orders may be issued during the 13-year contract period.

The computer systems provided for in the contract will be used in the Space Station Mission Control Center and the Space Station Training Facility. They also will be used in upgrading systems in the Mission Control Center and Shuttle Mission Training Facility. Additionally, this contract will provide ground based computer systems for future, yet unspecified, programs at the Johnson Space Center and other NASA centers.

The contract requires IBM to provide commercial off-the-shelf hardware and system software as well as commercially available system engineering, maintenance and training services as specified in delivery orders issued against the contract.

end

NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
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For Release:
October 17, 1991

Jeffrey Carr
RELEASE NO. 91-074

JSC TO HOST INFORMATION SYSTEMS SECURITY CONFERENCE

The Johnson Space Center's Mission Operations Directorate will host a two and a half-day conference on security technology for automated information systems, November 6-8. The conference, co-sponsored by the Information Systems Security Association (ISSA) - Texas Gulf Coast Chapter and the University of Houston - Clear Lake, will focus on new security technology and concepts for enhancing the integrity of automated information systems (AIS).

The Johnson Space Center is responsible for providing AIS security for Space Shuttle and Space Station operations. The Mission Operations Directorate (MOD) is currently in the process of developing information systems and security concepts for the Space Station Freedom.

The event is intended to promote an exchange of information among NASA and industry security professionals that will help assure that these systems are established with the best, most cost-effective security technology available.

According to MOD director Gene Kranz, "The systems we are developing for Space Station Freedom will be operational in 1995 and beyond. The challenge is to know which technologies to watch and when to choose them." "For this conference, we have assembled some of the best minds and technologies available", said Kranz. "Now is the time for sharing ideas, lessons learned, and for establishing visions for the future."

The conference will be held at the Holiday Inn - Hobby Airport in Houston, and will operate in two disciplines. One will consist of papers and panels discussing NASA specific topics and AIS security concepts, and the other of vendor demonstrations. Speakers will emphasize the application of new technology and concepts, NASA experiences and development efforts, system integrity, and AIS architectures. A vendor exhibition area will be open to the public.

Editors Note: News media who are interested in attending should contact Jeff Carr, Media Service Branch, 713/483-5111.

# # #

S. Gov't

NASA News

National Aeronautics and Space Administration

Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release:

Jeffrey Carr
Release No. 91-079

November 13, 1991

FLIGHT CONTROL OF STS-44

Flight control for STS-44, the tenth flight of Atlantis, and the 44th Shuttle mission, will follow those procedures and traditions common to U.S. manned space flights since 1965, when the Mission Control Center was first used.

At Solid Rocket Booster ignition, responsibility for conduct of the mission will revert to the Mission Control Center (MCC) in Houston. Mission support in the MCC will begin five hours prior to launch and continue through landing.

The primary objective of mission STS-44 is the deployment of the Defense Support Program (DSP) satellite. Once Atlantis and crew are cleared for orbital operations, preparation and deployment of the DSP atop it's inertial upper stage will be coordinated between flight controllers in Houston and payload controllers at the Consolidated Space Test Center (CSTC) at Onizuka Air Force Base in Sunnyvale, California. Deployment is set for flight day one on orbit 5.

The mission will be conducted from Flight Control Room One (FCR-1) on the second floor of the MCC located in Bldg. 30 at the Johnson Space Center. The teams of flight controllers will alternate shifts in the control center and in nearby analysis and support facilities.

The handover between each team takes about an hour and allows each flight controller to brief his or her replacement on developments during the previous two shifts.

The four flight control teams for this mission will be referred to as the Ascent/Entry, Orbit 1, Orbit 2, and Planning teams. The ascent and entry phases will be conducted by Flight Director Ronald D. Dittemore. The Orbit 1 team will be led by Flight Director Philip L. Engelauf. The Orbit 2 team, will be headed by Lead Flight Director J. Milt Heflin. The planning team will be directed by Flight Director Charles W. Shaw.

(more)

MCC POSITIONS AND CALL SIGNS FOR STS-44

The flight control positions in the MCC, and their responsibilities, are:

Flight Director (FLIGHT)

Has overall responsibility for the conduct of the mission.

Spacecraft Communicator (CAPCOM)

By tradition an astronaut; responsible for all voice contact with the flight crew.

Flight Activities Officer (FAO)

Responsible for procedures and crew timelines; provides expertise on flight documentation and checklists; prepares messages and maintains all teleprinter and/or Text and Graphics System traffic to the vehicle.

Integrated Communications Officer (INCO)

Responsible for all Orbiter data, voice and video communications systems; monitors the telemetry link between the vehicle and the ground; oversees the uplink command and control processes.

Flight Dynamics Officer (FDO)

Responsible for monitoring vehicle performance during the powered flight phase and assessing abort modes; calculating orbital maneuvers and resulting trajectories; and monitoring vehicle flight profile and energy levels during reentry.

Trajectory Officer (TRAJECTORY)

Also known as "TRAJ," this operator aids the FDO during dynamic flight phases and is responsible for maintaining the trajectory processors in the MCC and for trajectory inputs made to the Mission Operations Computer.

Guidance, Navigation & Control Systems Engineer (GNC)

Responsible for all inertial navigational systems hardware such as star trackers, radar altimeters and the inertial measurement units; monitors radio navigation and digital autopilot hardware systems.

(more)

Guidance & Procedures Officer (GPO)

Responsible for the onboard navigation software and for maintenance of the Orbiter's navigation state, known as the state vector. Also responsible for monitoring crew vehicle control during ascent, entry, or rendezvous.

Rendezvous Guidance and Procedures Officer (RENDEZVOUS)

The RENDEZVOUS GPO is specialist who monitors onboard navigation of the Orbiter during rendezvous and proximity operations. The UARS deploy maneuver involves an active separation, using rendezvous radar to verify separation rates, requiring the support of this specialist

Environmental Engineer & Consumables Manager (EECOM)

Responsible for all life support systems, cabin pressure, thermal control and supply and waste water management; manages consumables such as oxygen and hydrogen.

Electrical Generation and Illumination Officer (EGIL)

Responsible for power management, fuel cell operation, vehicle lighting and the master caution and warning system.

Payloads Officer (PAYLOADS)

Coordinates all payload activities; serves as principal interface with remote payload operations facilities.

Data Processing Systems Engineer (DPS)

Responsible for all onboard mass memory and data processing hardware; monitors primary and backup flight software systems; manages operating routines and multi-computer configurations.

Propulsion Engineer (PROP)

Manages the reaction control and orbital maneuvering thrusters during all phases of flight; monitors fuel usage and storage tank status; calculates optimal sequences for thruster firings.

Booster Systems Engineer (BOOSTER)

Monitors main engine and solid rocket booster performance during ascent phase.

(more)

Ground Controller (GC)

Coordinates operation of ground stations and other elements of worldwide space tracking and data network; responsible for MCC computer support and displays.

Maintenance, Mechanical, Arm & Crew Systems (MMACS)

Formerly known as RMU; responsible for remote manipulator system; monitors auxiliary power units and hydraulic systems; manages payload bay and vent door operations.

Extravehicular Activities (EVA)

A specialist responsible for monitoring and coordinating preparations for and execution of space walks. Responsibilities include monitoring suit and EVA hardware performance.

Payload Data & Retrieval System (PDRS)

A specialist responsible for monitoring and coordinating the operation of the remote manipulator system.

Flight Surgeon (SURGEON)

Monitors health of flight crew; provides procedures and guidance on all health-related matters.

Public Affairs Officer (PAO)

Provides real-time explanation of mission events during all phases of flight.

# # #

STS-44 FLIGHT CONTROL TEAM STAFFING

Position	Ascent/Entry	Orbit 1	Orbit 2/Lead	Planning
FLIGHT	Ron Dittemore	Phil Engelauf	Milt Heflin	Chuck Shaw
CAPCOM	John Casper (A) Bob Cabana (E)	Jan Davis	Bill Shepherd	Marsha Ivins
FAO	John Curry	John Curry	Pete Hasbrook	Greg Smith
INCO	Ed Walters	Thomas Kalvelage	Jay Conner	Harry Black
FDO	Bruce Hilty (A) Doug Rask (E)	Dan Adamo	Mark Haynes	Carson Sparks
TRAJ	Brian Perry (A) Debbie Langan (E)	William Britz	Roger Simpson	Richard Theis
GNC	John Shannon	John Shannon	Stan Schaefer	Phillip Perkins
GPO	Ken Patterson (A) Glen Hillier (E)			
EECOM	Dave Herbek	Dave Herbek	Pete Cerna	Daniel Molina
EGIL	Ray Miessler	Brian Anderson	Mark Fugitt	Charles Dingell
PAYLOADS	Tim Baum	Tim Baum	David Schurr	Gene Cook

(more)

STS-44 FLIGHT CONTROL TEAM STAFFING
(Continued)

Position	Ascent/Entry	Orbit 1	Orbit 2	Planning
DPS	Gloria Araiza	Gloria Araiza	Burt Jackson	Clyde Sherman
PROP	Tony Ceccacci	Tony Ceccacci	Matthew Barry	Carlyle Lowe
BOOSTER	Franklin Markle Terri Stowe	/////	//////	Michael Dingler
GC	Chuck Capps John Wells	Bob Reynolds Henry Allen	Ed Klein John Snyder	Joe Aquino Frank Stolarski
MMACS	Kevin McCluney	Kevin McCluney	Paul Dye	Robert Doremus
EVA	Bob Adams	Bob Adams	Richard Fullerton	Jerry Miller
SURGEON				
PAO	James Hartsfield	Kari Fluegel	Kyle Herring	Billie Deason

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(A) = Ascent; (E) = Entry
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NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release

Kelly Humphries
Release No. 91-180

November 15, 1991

COOKE TO MANAGE LUNAR AND MARS EXPLORATION PROGRAM OFFICE

Doug Cooke has been appointed manager of the Lunar and Mars Exploration Program Office at JSC, replacing Mark Craig who is expected to be reassigned to the Space Station Projects Office.

The program office, with a staff of about 40 civil service and contract workers, is responsible for defining an outpost on the Moon and human missions to Mars, both technically and programmatically.

Cooke, who has been deputy manager and acting manager of the office since its formation in February 1990, joined JSC in the Engineering Analysis Division in 1973 and has held progressively responsible managerial positions in the Space Station Program Office and the Space Shuttle Program Office. Before joining the LMEPO, he was deputy manager of the Space Shuttle Engineering integration Office and deputy manager of the Lunar and Mars Exploration Office in the New Initiatives Office.

Craig, who has managed the LMEPO since its formation, is on special assignment to support policy, programmatic and technical definition of the 90-day orbiter/space station integrated system. Pending NASA Headquarters' approval, Craig will be reassigned to the Space Station Projects Office.

Craig joined JSC as a co-op in the Engineering Directorate in 1967. He has been assistant manager and acting manager of the System Engineering and Integration Office, Space Station Program Office, and special assistant to the director of Engineering. He was manager of the Lunar and Mars Exploration Office and deputy manager of the Mars Rover Sample Return Project.

Most recently, he has been special assistant for exploration to the associate administrator for aeronautics, exploration and technology, and to the director of space exploration on special assignment to NASA Headquarters.

- END -

S Gov't

NASA News

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For Release

November 22, 1991

Kari Fluegel
(Phone: 713/483-5111)

RELEASE: 91-083

MICROGRAVITY TEST OF CELL CULTURE VESSEL TO FLY ON ATLANTIS

Technology improvements are making medical advances more and more commonplace. Still, research remains limited by the boundaries of Earth's gravity.

One boundary, that of tissue growth in the laboratory, is being pushed farther out due to work in Johnson Space Cernter's (JSC) Biotechnology Program with a system that promotes such cell culturing.

The device, called the rotating wall vessel, cultures cells in an environment that approximates how they might grow in space. The rotating wall vessel nurtures the cell cultures in a horizontal cylinder that slowly rotates, bathing the cells in nutrients and oxygen and keeping them gently suspended in the liquid medium.

Tissues grown during the development and testing of the vessel already have been put to work in attempts to create drugs, grow tissue for transplantation and understand malignancies. The rotating wall vessel, developed as a cell culture growth tool for Space Station Freedom, has pioneered research in lung tissue growth, skin growth, small intestines, cartilage growth, colon cancer proliferation, brain tumor growth and therapeutics.

"The biggest problem with cell cultures grown in the laboratory is the mechanical means used to suspend them," said Glenn Spaulding, Manager of JSC's Space Biotechnology Program.

In other culture devices, cells become damaged by the suspension vessel or do not bond together to create tissues. Consequently, scientists have not had high-fidelity tissue models available for their research.

- more -

Research done with NASA's rotating wall vessel over the past 2 years, however, has produced cell cultures more like the human tissue. The more similar the cells are to the original tissue, the more applicable and appropriate they are to the intended research.

Research begins with a small seeding of starter cells from a donor or patient. Cell assemblies then begin to take form and resemble the original tissue.

The rotating wall vessel hardware will receive its first test and equipment checkout in space during next week's Space Shuttle Atlantis (STS-44) mission. Flown as Detailed Supplementary Objective 316, the vessel hardware will be used in a test that researchers hope will confirm their theories and calculations about how the flow fields work in space, thus validating the fluid dynamics of the device in the absence of living cells.

Plastic beads of various sizes rather than cell cultures are being flown in the vessel for the STS-44 test. Video of bead movement will be collected for postflight analysis to refine the system. Plans are to fly cell cultures on future shuttle flights and Space Station Freedom.

By emulating the space environment, the rotating wall vessel allows tissue cultures to grow for a longer time than previously was possible. "The longer certain cells grow, the larger and more well-developed they become, the more meaningful the medical application," Spaulding said.

The rotating wall vessel, however, may not speed the growth process. What takes months to generate within the body would also take months within the vessel.

Spaulding attributes the development of the rotating wall vessel to serendipity or to having the right people in the right place at the right time.

About 2 years ago, researchers who were developing a plan to grow tissue cultures in space were trying to solve the question of how to suspend the cells for the experiment, he said. The primary problem was stowing the suspension vessel in a middeck locker that would shift its orientation during Shuttle ascent, orbit and entry to the extent that the tissue would be damaged.

- more -

Then, with the help of a power drill and a small jar of beads, investigators Tinh Trinh and David Wolf gave birth to the concept of keeping the culture delicately suspended by maintaining it in a state of continual motion. The first vessel was built by Ray Schwartz and the hardware for the DSO was developed and constructed in 9 months, Spaulding said. "If it weren't for the teamwork and the Apollo-like spirit of this group, medical science would not have had this tool," Spaulding said.

Even though the rotating wall vessel greatly improves upon the older classical methods of tissue culturing on Earth, gravity still plays a role in the culture process. As the tissue becomes larger, it settles to the bottom of the growth chamber and is damaged. Following that, the cultures themselves settle too rapidly to stay suspended in the vessel. Cells can be grown successfully on Earth in the rotating wall vessel for about 3 months. They then drop to the bottom of the vessel and become damaged.

In the future, cultures may be grown on the Earth for the first 3 months, then flown in space where gravitational effects are miniscule for the remainder of their development.

Though never tested with tissue cultures in space where its full potential can be realized, the rotating wall vessel already has made important strides in medical research.

"We're using NASA's rotating wall vessel to study the interaction between the human colon fibroblast stromal support cells and human colon cancers because we feel that by being able to study phenomenon in this vessel we may gain a unique insight into the cellular interaction and how this relates to the progressive growth of tumor in patients," said Dr. John Jessup of the Harvard Medical School's Laboratory of Cancer Biology.

Jessup is one of many investigators already using the rotating wall vessel technology. His research focuses on understanding how colon tissue develops and why malignancies develop in certain patients.

"In this vessel, we're able to re-create a three-dimensional culture that is very difficult to do in any other tissue culture apparatus," he said. "Most tissue culture systems are gravity-limited to two-dimensional cultures. By lacking the third dimension of vertical growth, it's very difficult to be able to study what happens when cells are growing around one another."

A research group at the University of Texas Medical School has successfully grown a virus responsible for high infant mortality in Third World countries and is now laying the foundation for vaccine development. Still another at the Huntington Medical Research Institute, Pasadena, Calif., is using the rotating wall vessel to develop better methods of treating malignant brain tumors, which are 100 percent fatal.

"This will be a sterling collaborative effort because we very much want to call on the expertise of the JSC scientists and engineers who have developed this whole technology," said Dr. Marylou Ingram, Senior Research Scientist at the Huntington Medical Research Institute. "We will be studying the tumors that we get from our patients and our aim is to, as soon as possible, be able to produce tumor-sensitized lymphocytes which we may be able to use in the treatment of our patients."

Access to the microgravity environment of space, which will be available on Space Station Freedom, will only enhance the research begun with the rotating wall vessel in Earth-based laboratories.

"We need microgravity for an extended time period," Spaulding said. "Without space station there would be no opportunity to exploit the potential of this fascinating and important tool."

- end -

JSC

Barbara Schwartz
Release No. 91-085

December 3, 1991

FIRST GROUP OF PROSPECTIVE ASTRONAUTS TO ARRIVE AT JSC

The first of several groups of prospective astronauts will be at Johnson Space Center (JSC) the week of Dec. 8 for orientation, interviews, and medical evaluations.

Approximately 90 of more than 2200 applicants are expected to be interviewed during December and January for a chance to be among the final 12 to 19 who will be named as astronaut candidates next spring. Those selected will join 6 international astronaut candidates representing Canada, Japan, and the European Space Agency for training at JSC beginning later in 1992.

The first group of 22 will consist of Jeffrey E. Anderson, M.D., of Chicago, IL; Daniel T. Barry, Ph.D., M.D., of Ann Arbor, MI; Roger D. Billica, M.D., of JSC; Charles E. Brady (Cdr., USN) of Oak Harbor, WA; Charles M. Buntin, Ph.D., of JSC; Catherine G. Coleman (Capt., USAF) of Dayton, OH; Robert E. Fishman, Ph.D., of Mill Valley, CA; Michael L. Gernhardt of Webster, TX; Lincoln J. Greenhill, Ph.D., of Kensington, CA; John M. Grunsfeld, Ph.D., of Pasadena, CA; G. Richard Holt, M.D., of San Antonio, TX; Richard T. Jennings, M.D., of JSC; Scott L. Klakamp, Ph.D., of Pasadena, CA; Taylor W. Lawrence of Livermore, CA; Issac Maya, Ph.D., of Gainesville, FL; Jan R. Rogers of Marshall Space Flight Center (MSFC) in Huntsville, AL; Allison C. Sandlin, Ph.D., of Fredericksburg, VA; Stephen A. Shoop, M.D., of Los Angeles, CA; Mark L. Sobczak (Lcdr., USN) of Oakton, VA: Andrew S. W. Thomas, Ph.D., of Jet Propulsion Laboratory in Pasadena, CA; Richard J. Tubb (Maj., USAF) of Lebanon, IL; and Dennis S. Tucker, Ph.D., of MSFC in Huntsville, AL.

Astronaut candidate selections are conducted on a biennial basis. The number of candidates selected depends upon the Space Shuttle flight rate, overall program requirements, and astronaut attrition.

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NASA News

National Aeronautics and
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Washington, D.C. 20546
AC 202 453-8400

For Release

Mark Hess
Headquarters, Washington, D.C.
(Phone: 202/453-4164)

February 6, 1992

Jeffrey Carr
Johnson Space Center, Houston
(Phone: 713/483-5111)

N92-11

NOTE TO EDITORS

JSC SPACE STATION FACILITIES TO BE DEDICATED

A ceremony to dedicate two key facilities at the Johnson Space Center, Houston - the Space Station Control Center and the Space Station Training Facility - has been set for Thursday, Feb.13, at 11 a.m. EST.

Speakers for the event will include JSC Center Director Aaron Cohen and Mission Operations Director Eugene Kranz, who will be available for interviews following the ceremony.

A press tour of the facilities at 9:30 a.m.EST will preceed the ceremony.

News media interested in attending the events should contact the JSC newsroom (713/483-5111) as soon as possible. Participants should plan to arrive at JSC, Building 2, for badging and information no later than 9:15 am.

The dedication ceremony will be carried on NASA Select television (Satcom F2R, transponder 13, 72 degrees west longitude).

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For Release:

Kari Fluegel
RELEASE: 92-11

March 6, 1992

BIOREACTOR TEAM EARNS NASA INVENTOR OF THE YEAR HONORS

Not many would expect an agency known for Space Shuttle launches and Moon expeditions to make extraordinary contributions to medical research, but a biotechnology team in the Medical Sciences Division at NASA's Johnson Space Center (JSC) has done so, earning the honor of NASA Inventor of the Year.

JSC's David Wolf, Ray Schwarz and Tinh Trinh recently were selected by NASA's General Counsel Office for their development and design of a new class of horizontally rotating tissue culture systems -- also known as the rotating wall bioreactor -- that in some ways simulate microgravity.

Bioreactors are cell maintenance devices used for research in growth and culturing cells or tissues. Investigators around the country already have evaluated the JSC bioreactor as a tool for pioneering research in lung tissue, skin growth, intestinal disease, cartilage growth, colon cancer, brain tumor growth and therapeutics. "This is a good example of when NASA research benefits man on Earth," Wolf said.

The bioreactor cultures the cells in a horizontal cylinder that slowly rotates, resulting in lower stress environments than most devices. It is believed that in space the rotating wall vessel would offer even lower shears which might provide more spectacular results.

Prior to the development of JSC's bioreactor, three-dimensional tissue growth could not be accomplished. Traditional culture devices allow only two-dimensional growth because cells become damaged by the suspension vessel or do not bond together to organize themselves into actual tissues.

Research with the rotating wall vessel over the past 2 years has enabled development of cell cultures that behave more like three-dimensional tissues behave in the human body. For this to be true, it is necessary that cells recreate the correct three-dimensional relationships in the bioreactor as they do in the parent tissue.

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Wolf, Schwarz and Trinh started work on the rotating wall bioreactor in 1986 while the Shuttle fleet was grounded. Tissue researchers, then unable to have access to space, needed a means to simulate microgravity on Earth, and a pooling of knowledge in biology with gravitational physics, fluid dynamics, rotational systems and life support systems was the answer to the question, Wolf said.

It was known that plants developed similarly when exposed to either horizontal rotation or actual microgravity. Coincidentally, Trinh tried rotating a syringe with microcarrier beads in an electric drill. The drill's spinning action suspended the beads in controlled positions, reducing greatly the stresses experienced by the cells.

The team found that just moving the medium inside the vessel was not enough. The boundary layer of the medium next to a non-rotating wall added enough sheer stress to damage the culture. "Rotating the wall takes away the fluid velocity gradients near the vessel walls," Wolf said. "That's the big difference. That's why it works." The bioreactor also needed to compensate for the orientation changes experienced by a Shuttle middeck locker during ascent, orbit and entry.

Eventually several classes of vessels -- some batch and some with continuous media profusion -- were constructed including key components of a future Space Bioreactor.

"The Space and Life Sciences Directorate Medical Sciences Division's Biomedical Research and Operations Branch was an ideal place to conduct research. They provided all the support necessary to make it happen," Wolf said. "A mix of expertise was required including biology, mechanics and computers to implement the novel culture system concepts. A space center provides such multidisciplinary talent. That exactly describes the talented biotechnology team at JSC."

Wolf said that the outstanding results seen in the Earth-based research is predicted to be enhanced by "orders of magnitude" when the Space Bioreactor vessel is operated in microgravity. Wolf, now an astronaut scheduled to fly on STS-58 next year, was the manager of the Biotechnology Laboratory when the bioreactor was developed. Trinh is a technician with Krug International, and Schwarz is Chief Engineer of Synthecon Inc., the company with the exclusive license to the bioreactor technology.

This year's honor wil be shared with William G. Simpson, Max H. Sharpe and William E. Hill of Marshall Space Flight Center for "Sprayable Lightweight Ablative Coating," used on the solid rocket boosters for layering not possible with the previously used material.

Both teams will be honored at NASA Headquarters this month. Wolf, Schwarz and Trinh also are the agency's nominees for the National Inventor of the Year competition conducted by the National Intellectual Property Owners Association and the U.S. Patent and Trademark Office.

"I was thrilled not just for the team but that NASA recognized the technology as important and relevant to further space research," Wolf said. The bioreactor work was sponsored by the Office of Space Science and Applications Microgravity Science and Applications Division.

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For Release:

Kari L. Fluegel
Release No. 92-012

March 9, 1992

SCIENTISTS GATHER FOR LUNAR/PLANETARY SCIENCE CONFERENCE

Scientists from around the globe will gather in Houston to discuss research covering the universe at the 23rd Annual Lunar and Planetary Science Conference, March 16-20, 1992, at the Johnson Space Center (JSC).

More than 700 researchers will converge at JSC's Gilruth Center for 5 days of presentations on a variety of subjects with much of the focus on Venus and findings from NASA's Magellan probe.

Magellan, deployed from the Space Shuttle Atlantis in May 1989, has mapped about 97 percent of the Venusian surface with its remote sensing cameras. The subsequent scientific findings have been centerpieces of discussion for the past two science conferences. An overview of the Magellan program called "Magellan at Venus: The Global Perspective Emerges" will start the conference on March 16 at 9:30 a.m EST. Other papers focusing on Venus will be presented throughout the event.

The public is invited to a special discussion on Magellan results and a global view of planetary cratering on March 16 at 9 p.m. in the Olin E. Teague Auditorium, Bldg. 2 at JSC. Participants will be Ellen Stofan, Deputy Project Scientist for the Magellan Program at Jet Propulsion Laboratory, Pasadena, Calif., and Eugene Shoemaker of the U.S. Geological Survey. Hosts are Dr. Michael D. Griffin, NASA's Associate Administrator For Exploration, and Wes Huntress, Director Of The Solar System Exploration Division in NASA 's Office of Space Science and Applications.

- more -

Other conference presentations are:

o March 16, 9:30 a.m. -- Meteorite Parent Bodies; Mare Basalts, KREEP and Copernican Ejecta. 2:30 p.m. -- Venus Geophysics; Assorted Achondrites; Origin and Evolution of Planetary Systems.

o March 17, 9:30 a.m. -- Venus: Tectonism and Volcanic Associations; Reduced Meteorites; Evolution of the Lunar Crust and Mantle; Outer Solar Systens/Remote Sensing: Laboratory. 2:15 p.m. -- Venus Volcanism. 2:30 p.m. -- Chondrules; Impact Cratering: Theory and Experimentation. 8 p.m. -- Poster Session at the Lunar and Planetary Institute.

o March 18, 9:30 a.m. -- Dynamics of Impacts and Resurfacing on Venus; Nebular Processes and CAIs; A Field Trip to the Moon; Martian Spectral and Laboratory Data. 2:30 p.m. -- Tectonism and Volcanism: Moon and Mars; Educational Outreach and Career Opportunities; Antarctic Micrometeorites and LDEF; Solar Wind and Cosmic Ray Irradiation.

o March 19, 930 a.m. -- Mars Surface and Atmosphere Through Time: Atmosphere and Surface -- Surface Properties and Processes; Cosmic Dust and Comets; Planetary Geochemistry. 2:30 p.m. -- Mars Surface and Atmosphere Through Time: Atmosphere and Surface -- Atmosphere Interactions; Stardust; Terrestrial Impacts and the KT Boundary. 8p.m. -- Poster Session at the Lunar and Planetary Institute.

o March 20, 9:30 a.m. -- Offerings from the Moon; Acapulcoites and Stony-Iron Meteorites, Meteorite Organics; Galileo: Gaspra Encounter/Asteroids.

All sessions are at the Gilruth Center except when otherwise noted. The conference is co-sponsored by The Lunar And Planetary Institute and JSC.

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For Release:

Barbara Schwartz
RELEASE NO. 92-014

March 12, 1992

ASTRONAUT VANCE BRAND JOINS AERO-SPACE PLANE PROGRAM

Veteran astronaut Vance Brand, commander of three Space Shuttle missions, has accepted a new position as Director of Plans for the X-30 National Aero-Space Plane (NASP) Joint Program Office at Wright-Patterson Air Force Base, Dayton, Ohio, effective immediately.

Brand will develop program plans and objectives to meet the national goals proposed for the National Aero-Space Plane effort and will assess the program to make sure individual technologies are fully integrated into the X-30. The X-30 is a flight research vehicle that will take off horizontally, fly into orbit, using airbreathing engines as its primary propulsion, then return through the atmosphere to land on a runway.

During his 25-year tenure at the Johnson Space Center, Houston, Brand logged 746 hours in space on four flights including the Apollo-Soyuz mission in July 1975 and three Shuttle missions -- STS-5 in November 1982, STS-41B in February 1984 and STS-35 in December 1990.

Selected as an astronaut in April 1966, Brand has applied his engineering expertise to numerous ground and flight test projects. In the Astronaut Office, he has held the positions of Chief of the Operations Development Branch and Chief of the Safety Branch. He also served as Assistant Project Manager for Integration and Assembly of the Space Station.

Brand has received many awards, including the Federation Aeronautique Internationale Yuri Gagarin Gold Medal (1976) and De La Vaulx Medal (1983), the AIAA Special Residential Citation (1977), the AAS Flight Achievement Award for 1976 (1977) and two NASA Space Flight Medals (1983 and 1984).

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"I thoroughly enjoyed my 25 years at Johnson Space Center and the great experience of working on the programs from Apollo through Space Shuttle. I appreciated working with the calibre of people at JSC and have many friends here. Unfortunately, my family and I have to leave the area to start my new assignment. However, I am looking forward to the challenge of working on the Aero-Space Plane with its advanced technology and single stage-to-orbit objective."

Flight Crew Operations Director Donald R. Puddy said, "Although Vance will be missed at JSC after a long and successful career, I'm glad he will continue working within the NASA family. He will have an opportunity to apply his multi-program engineering background and space flight experience to this exciting new project. We wish him success in this new technologically challenging endeavor."

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Kari Fluegel
RELEASE NO: 92-15

March 13, 1992

METEORITES' WATER PROVIDES CLUE TO RED PLANET'S PAST

A single drop of water rarely causes excitement in the scientific community, but a few milligrams of liquid extracted from a meteorite may have started to answer one of the great mysteries of planetary science.

Were the channels seen on the surface of Mars carved by once great torrents of rushing water or by some other process?

Dr. Everett Gibson of NASA's Johnson Space Center (JSC), Houston, Planetary Sciences Branch; Dr. Haraldur Karlsson, formerly a National Research Council postdoctoral fellow at JSC; and scientists at the University of Chicago have analyzed drops of water extracted from several meteorites believed to have come from Mars and have concluded that the oxygen isotopes in the water were extraterrestrial.

"It's really a beautiful piece of scientific work to do this analysis," Gibson said. "We are extremely pleased with the results of this team effort." The results of the team's findings are being published in today's issue of the journal SCIENCE.

Photographs returned to Earth from the Mariner 9 and Viking spacecraft show features that suggest Mars once may have had a water-rich atmosphere and flowing water on its surface. Sometime in its history, however, most of the water apparently disappeared, leaving only minute amounts of vapor in the atmosphere.

Through the years, several meteorites have been collected on Earth that scientists have identified as Martian by comparing them to information gleaned by the Viking spacecraft. Six of these meteorites were used in the water extraction procedure.

Gibson said the meteorites were heated in steps in a small vacuum system at JSC to extract trace amounts of water. The water samples were hand-carried to the University of Chicago for

- more -

analysis of oxygen isotopes. Although the water droplets were less than 1/64ths of an inch in diameter, it was enough to do the analysis.

The analysis determined that the oxygen isotopes in the water were different from the oxygen isotopes in the silicate portion of the meteorites. In other words, the water had a different parent source than the oxygen in the silicate minerals in the meteorites. That parent source could have been the Martian atmosphere, an ancient Martian ocean or even a comet that impacted the planet, Gibson said.

The lack of homogeneous oxygen isotopes on Mars supports the theory that Mars does not have plate tectonics. If such a process had been active on Mars, the oxygen isotopes would have been homogenized as they are on Earth.

Findings from the work completed by the team may answer some questions about the processes operating in the solar system, but the findings raise other questions -- what happened to the water on Mars and does Earth have the same destiny?

"These are large and difficult questions to comprehend," Gibson said, "but perhaps if we can trace the origins and alterations of planetary atmospheres and oceans, the evolution of our solar system may be better understood."

Besides Gibson and Karlsson, who is now in the Department of Geosciences at Texas Tech University, Lubock, team members included Robert N. Clayton and Toshiko K. Mayeda of the Department of Geophysical Sciences and the Enrico Fermi Institute at the University of Chicago.

- end -

NASA News

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For Release:

Barbara Schwartz March 16, 1992
RELEASE NO. 92-016

SPACE SHUTTLE CREW ASSIGNMENTS ANNOUNCED

Crew members for four 1993 Space Shuttle missions were named today.

Frank L. Culbertson, Jr., Capt., U.S. Navy, has been selected to command Space Shuttle mission STS-51 scheduled for early 1993. Culbertson and his crew will deploy the Advanced Communications Technology Satellite (ACTS) and the German-developed Astronomy Telescope-Shuttle Pallet Satellite (ASTRO/SPAS). ACTS, propelled by a Transfer Orbit Stage booster to geosynchronous orbit, will test technology for future communications systems. ASTRO/SPAS will carry the Orfeus telescope to study radiation absorbing material in the solar system. Other crew members are:

William F. Readdy, Pilot
Daniel W. Bursch, Lt. Cdr., U.S. Navy, mission specialist
James H. Newman, Ph.D., mission specialist
Carl E. Walz, Maj., U.S. Air Force, mission specialist

Culbertson was the Pilot on STS-38, a Department of Defense mission in November 1990. He was born in Charleston, S.C., but considers Holly Hill, S.C., his hometown. Culbertson received a B.S. degree in aerospace engineering from the U.S. Naval Academy in 1971.

Readdy was a mission specialist and orbit pilot on STS-42 in Jan. 1992, during which 55 scientific experiments were performed aboard the International Microgravity Laboratory-1. Readdy was born in Quonset Point, R.I., but considers McLean, Va., his hometown. He received a B.S. degree in aeronautical engineering from the U.S. Naval Academy in 1974.

Bursch was born in Bristol, Pa., but considers Vestal, N.Y., his hometown. This is his first mission. He received a B.S. degree in physics from the U.S. Naval Academy in 1979 and an M.S. degree in engineering science from the Naval Postgraduate school in 1991.

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Newman was born in the Trust Territory of the Pacific Islands but considers San Diego, Calif., his hometown. This is his first mission. Newman received a B.A. degree in physics from Dartmouth College in 1978 and M.A. and Ph.D. degrees in physics from Rice University in 1982 and 1984, respectively.

Walz, born in Cleveland, is assigned to his first mission. He received a B.S. degree in physics from Kent State University in 1977 and an M.S. degree in solid state physics from John Carroll University in 1979.

Kenneth Cameron, Col., U.S. Marine Corps, has been selected as commander of Space Shuttle mission STS-56, also scheduled for early 1993. STS-56 is the second Atmospheric Laboratory for Applications and Science (ATLAS) mission. Additionally, Cameron and his crew will deploy and retrieve the Spartan 201 satellite which will collect data to study the physics of solar-wind acceleration. Other crew members are:

Stephen S. Oswald, Pilot
Kenneth D. Cockrell, mission specialist
Michael Foale, Ph.D., mission specialist
Ellen Ochoa, Ph.D., mission specialist

Cameron, Pilot on the STS-37 Compton Gamma Ray Observatory mission in April 1991, was born in Cleveland. He received B.S. and M.S. degrees in aeronautics and astronautics from MIT in 1978 and 1979.

Oswald, Pilot on the STS-42 IML-1 mission, was born in Seattle, Wash., but considers Bellingham, Wash., his hometown. He received a B.S. degree in aerospace engineering from the U.S. Naval Academy in 1973.

Cockrell, who was born in Austin, Texas, is assigned to his first mission. He received a B.S. degree in mechanical engineering from the University of Texas in 1972 and an M.S. degree in aeronautical systems from the University of West Florida in 1974.

Foale, a U.S. citizen, was born in England and considers Cambridge his hometown. He is scheduled to fly as a mission specialist on the first ATLAS mission later this month. He received a B.A. degree in physics from Queen's College in 1978 and a Ph.D. degree in laboratory astrophysics from Cambridge University in 1982.

Ochoa was born in Los Angeles but considers LaMesa, Calif., her hometown. This is her first mission. Ochoa received a B.S. degree in physics from San Diego State University in 1980 and an M.S. and Ph.D. in electrical engineering from Stanford University in 1981 and 1985, respectively.

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Ronald J. Grabe, Col., U.S. Air Force, has been selected to command Space Shuttle mission STS-57 scheduled to launch in mid-1993. STS-57 will carry the commercial middeck augmentation module called SPACEHAB and retrieve the European Retrievable Carrier. Other crew members are:

Brian Duffy, Lt. Col., U.S. Air Force, Pilot
G. David Low, Payload Commander (previously named)
Janice E. Voss, Ph.D., mission specialist (previously named)
Nancy J. Sherlock, Capt., U.S. Army, mission specialist
Peter J. K. "Jeff" Wisoff, Ph.D., mission specialist

Grabe has flown on three Shuttle missions, as Pilot on STS-51J in October 1985 and STS-30 in May 1989 and as Commander on STS-42 earlier this year. Born in New York, N.Y., he received a B.S. degree in engineering science from the U.S. Air Force Academy in 1966 and studied aeronautics as a Fulbright Scholar at the Technische Hochschule, Darmstadt, West Germany, in 1967.

Duffy is scheduled to pilot the STS-45 ATLAS-01 mission later this month. Born in Boston, he received a B.S. degree in mathematics from the U.S. Air Force Academy in 1975 and an M.S. degree in systems management from the University of Southern California in 1981.

Sherlock was born in Wilmington, Del., but considers Troy, Ohio, her hometown. She received a B.A. degree in biological science from Ohio State University in 1980 and an M.S. degree in safety engineering from the University of Southern California in 1985. This is her first mission.

Wisoff, born in Norfolk, Va., received a B.S. degree in physics from the University of Virginia in 1980 and M.S. and Ph.D. degrees in applied physics from Stanford University in 1982 and 1986, respectively. This is his first mission.

Story Musgrave, M.D., is named Payload Commander for the STS-61 Hubble Space Telescope Revisit mission scheduled for late 1993. Musgrave will be making his fifth Space Shuttle flight. The remainder of the crew will be assigned at a later date.

Musgrave, born in Boston, has six degrees, including an M.D. degree from Columbia University in 1964 and an M.S. degree in physiology and biophysics from the University of Kentucky in 1966. He was a mission specialist on STS-6 in April 1983, Spacelab-2 in August 1985, STS-33 in November 1989 and STS-44 in November 1991.

-end-

NASA News

National Aeronautics and
Space Administration
Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release

BARBARA SCHWARTZ
RELEASE NO. 92-018

March 31, 1992

1992 ASTRONAUT CANDIDATES SELECTED

The National Aeronautics and Space Administration today announced the selection of 19 new astronaut candidates for the Space Shuttle program.

The candidates were chosen from among 2,054 qualified applicants, 87 of whom received interviews and medical examinations in December and January. They will report to the Johnson Space Center in August 1992 to begin a year of training and evaluation, after which they will receive technical assignments leading to selection for Shuttle flight crews.

The 1992 group consists of 4 pilot astronaut candidates and 15 mission specialist astronaut candidates, including 9 civilians and 10 military officers.

A listing of the candidates and biographical data follows:

S. Gov't
S. Gov't
U.S. Gov't

1992 ASTRONAUT CANDIDATES

Daniel T. Barry, M.D., Ph.D.	Civilian	Mission Specialist
Cdr. Charles E. Brady, Jr.	U.S. Navy	Mission Specialist
Capt. Catherine G. Coleman	U.S. Air Force	Mission Specialist
Michael L. Gernhardt, Ph.D.	Civilian	Mission Specialist
John M. Grunsfeld, Ph.D.	Civilian	Mission Specialist
Capt. Scott J. Horowitz	U.S. Air Force	Pilot
Lcdr. Brent W. Jett, Jr.	U.S. Navy	Pilot
Mr. Kevin R. Kregel	Civilian	Pilot
Lcdr. Wendy B. Lawrence	U.S. Navy	Mission Specialist
Cdr. Jerry M. Linenger	U.S. Navy	Mission Specialist
Capt. Richard M. Linnehan	U.S. Army	Mission Specialist
Lcdr. Michael E. Lopez-Alegria	U.S. Navy	Mission Specialist
Scott E. Parazynski, M.D.	Civilian	Mission Specialist
Lcdr. Kent V. Rominger	U.S. Navy	Pilot
Cdr. Winston E. Scott	U.S. Navy	Mission Specialist
Mr. Steven L. Smith	Civilian	Mission Specialist
Mr. Joseph R. Tanner	Civilian	Mission Specialist
Andrew S. W. Thomas, Ph.D.	Civilian	Mission Specialist
Mary E. Weber, Ph.D.	Civilian	Mission Specialist

BIOGRAPHICAL DATA

NAME: Daniel T. Barry, Ph.D., M.D., Mission Specialist

BIRTHDATE/PLACE: December 30, 1953 - Norwalk, Connecticut

RESIDENCE: Ann Arbor, Michigan

EDUCATION: Bolton High School, Alexandria, Louisiana
BS, Electrical Engr., Cornell Univ., 1975
MSE, Electrical Engr./Computer Science, Princeton Univ., 1977
MA, Electrical Engr./Computer Science, Princeton Univ., 1977
PhD, Electrical Engr./Computer Science, Princeton Univ., 1980
MD, Univ. of Miami, 1982

CURRENT POSITION: Assistant Professor
University of Michigan Medical Center
Ann Arbor, Michigan

PARENTS: Mr. & Mrs. Albeus E. Barry, Alexandria, Louisiana

MARITAL STATUS: Married to the former Susan R. Feinstein

NAME: Charles E. Brady, Jr., Commander, USN, Mission Specialist

BIRTHDATE/PLACE: August 12, 1951 - Pinehurst, North Carolina

RESIDENCE: Oak Harbor, Washington

EDUCATION: North Moore High School, Robbins, North Carolina
MD, Duke Univ., 1975

CURRENT POSITION: Flight Surgeon
NAS Whidbey Island, Washington

PARENTS: Mr. & Mrs. Charles E. Brady, Sr., Robbins, North Carolina

MARITAL STATUS: Married to the former Cathy Scherer

NAME: Catherine G. Coleman, Captain, USAF, Mission Specialist

BIRTHDATE/PLACE: December 14, 1960 - Charleston, South Carolina

RESIDENCE: Dayton, Ohio

EDUCATION: W. T. Woodson High School, Fairfax, Virginia
BS, Chemistry, MIT, 1983
PhD, Polymer Science & Engr., Univ. of Massachusetts, 1991

CURRENT POSITION: Research Chemist
Wright-Patterson AFB, Ohio

PARENTS: James J. Coleman, Vancouver, Washington
Anne L. Doty, Westerly, Rhode Island

MARITAL STATUS: Single

NAME: Michael L. Gernhardt, Ph.D., Mission Specialist

BIRTHDATE/PLACE: May 4, 1956 - Mansfield, Ohio

RESIDENCE: Webster, Texas

EDUCATION: Malabar High School, Mansfield, Ohio
BS, Physics, Vanderbilt Univ., 1978
MS, Bioengineering, Univ. of Pennsylvania, 1983
PhD, Bioengineering, Univ. of Pennsylvania, 1991

CURRENT POSITION: Vice President/General Manager
Oceaneering Space Systems
Webster, Texas

PARENTS: George M. Gernhardt, Marco Island, Florida
Suzanne C. Winters, Whitestone, Virginia

MARITAL STATUS: Single

NAME: John M. Grunsfeld, Ph.D., Mission Specialist

BIRTHDATE/PLACE: October 10, 1958 - Chicago, Illinois

RESIDENCE: Pasadena, California

EDUCATION: Highland Park High School, Highland Park, Illinois
BS, Physics, MIT, 1980
MS, Physics, Univ. of Chicago, 1984
PHD, Physics, Univ. of Chicago, 1988

CURRENT POSITION: Senior Research Fellow
California Institute of Technology
Pasadena, California

PARENTS: Mr. & Mrs. Ernest A. Grunsfeld, Highland Park, Illinois

MARITAL STATUS: Married to the former Carol E. Schiff

NAME: Scott J. Horowitz, Captain, USAF, Pilot

BIRTHDATE/PLACE: March 24, 1957 - Philadelphia, Pennsylvania

RESIDENCE: Edwards AFB, California

EDUCATION: Newbury Park High School, Newbury Park, California
BS, Engineering, California State Univ.-Northridge, 1978
MS, Aerospace Engineering, Georgia Tech, 1979
PHD, Aerospace Engineering, Georgia Tech, 1982

CURRENT POSITION: Experimental Test Pilot
Edwards AFB, California

PARENTS: Seymour B. Horowitz, Thousands Oaks, California
Iris D. Chester, Santa Monica, California

MARITAL STATUS: Married to the former Lisa Marie Kern

NAME: Brent W. Jett, Jr., Lieutenant Commander, USN, Pilot

BIRTHDATE/PLACE: October 5, 1958 - Pontiac, Michigan

RESIDENCE: California, Maryland

EEDUCATION: Northeast High School, Oakland Park, Florida
BS, Aerospace Engr., U.S. Naval Academy, 1981
MS, Aeronautical Engr., U.S. Naval Postgrad School, 1989

CURRENT POSITION: Fighter Pilot/Squadron Department Head
VF-74 (USS Saratoga)
NAS Oceana, Virginia

PARENTS: Mr. & Mrs. Brent W. Jett, Sr., Ft. Lauderdale, Florida

MARITAL STATUS: Single

NAME: Kevin R. Kregel, Pilot

BIRTHDATE/PLACE: September 16, 1956 - New York, New York

RESIDENCE: Houston, Texas

EDUCATION: Amityville Memorial High School, Amityville, New York
BS, Astronautical Engineering, USAF Academy, 1978
MPA, Troy State Univ., 1988

CURRENT POSITION: Aeronautical Research Pilot
Johnson Space Center
Houston, Texas

PARENTS: Alfred H. Kregel, Jr., Crossville, Tennessee
Frances T. Kregel, Deceased

MARITAL STATUS: Married to the former Jeanne F. Kammer

NAME: Wendy B. Lawrence, Lieutenant Commander, USN, Mission Specialist

BIRTHDATE/PLACE: July 2, 1959 - Jacksonville, Florida

RESIDENCE: Crownsville, Maryland

EDUCATION: Fort Hunt High School, Alexandria, Virginia
BS, Ocean Engineering, U.S. Naval Academy, 1981
MS, Ocean Engineering, MIT, 1988

CURRENT POSITION: Physics Instructor
U.S. Naval Academy
Annapolis, Maryland

PARENTS: William P. Lawrence, Crownsville, Maryland
Anne Haynes, Alvadore, Oregon

MARITAL STATUS: Single

NAME: Jerry M. Linenger, Commander, USN, Mission Specialist

BIRTHDATE/PLACE: January 16, 1955 - Mt. Clemens, Michigan

RESIDENCE: San Diego, California

EDUCATION: East Detroit High School, Detroit, Michigan
BS, Bioscience, U.S. Naval Academy, 1977
MD, Wayne State Univ., 1981
MS, Systems Management, USC, 1988
MPH, Univ. of North Carolina, 1989
PHD, Epidemiology, Univ. of North Carolina, 1989

CURRENT POSITION: Medical Researcher
Naval Health Research Center
San Diego, California

PARENTS: Mr. & Mrs. Donald W. Linenger, East Detroit, Michigan

MARITAL STATUS: Married to the former Kathryn M. Bartmann

NAME: Richard M. Linnehan, Captain, USA, Mission Specialist

BIRTHDATE/PLACE: September 19, 1957 - Lowell, Massachusetts

RESIDENCE: San Diego, California

EDUCATION: Pelham High School, Pelham, New Hampshire
BS, Zoology, Univ. of New Hampshire, 1980
DVM, Ohio State Univ., 1985

CURRENT POSITION: Clinical Veterinarian
U.S. Army Element
Naval Ocean Systems Center
San Diego, California

PARENTS: Richard H. Linnehan, Deceased
Carol J. Robinson, Townsend, Massachusetts

MARITAL STATUS: Single

NAME: Michael E. Lopez-Alegria, Lt. Commander, USN, Mission Specialist

BIRTHDATE/PLACE: May 30, 1958 - Madrid, Spain

RESIDENCE: Waldorf, Maryland

EDUCATION: Mission Viejo High School, Mission Viejo, California
BS, Systems Engineering, U.S. Naval Academy, 1980
MS, Aeronautical Engineering, U.S. Naval Postgrad School, 1988

CURRENT POSITION: ES-3A Program Manager
Naval Air Test Center
NAS Patuxent River, Maryland

PARENTS: Mr. & Mrs. Eladio Lopez-Alegria, Mission Viejo, California

MARITAL STATUS: Married to the former Julieann Ridge

NAME: Scott E. Parazynski, M.D., Mission Specialist

BIRTHDATE/PLACE: July 28, 1961 - Little Rock, Arkansas

RESIDENCE: Evergreen, Colorado

EDUCATION: American Community High School, Athens, Greece
BS, Biology, Stanford Univ., 1983
MD, Stanford Univ., 1989

CURRENT POSITION: Emergency Medicine Resident
Denver Affilliated Residency in Emergency Medicine
Denver, Colorado

PARENTS: Mr. & Mrs. John Parazynski, Bellevue, Washington

MARITAL STATUS: Single

NAME: Kent V. Rominger, Lieutenant Commander, USN, Pilot

BIRTHDATE/PLACE: August 7, 1956 - Del Norte, Colorado

RESIDENCE: Poway, California

EDUCATION: Del Norte High School, Del Norte, Colorado
BS, Civil Engineering, Colorado State Univ., 1978
MS, Aeronautical Engineering, U.S. Naval Postgrad School, 1987

CURRENT POSITION: Operations Officer
VF-211
NAS Miramar
San Diego, California

PARENTS: Mr. & Mrs. Ralph V. Rominger, Del Norte, Colorado

MARITAL STATUS: Married to the former Mary Sue Rule

NAME: Winston E. Scott, Commander, USN, Mission Specialist

BIRTHDATE/PLACE: August 6, 1950 - Miami, Florida

RESIDENCE: Yardley, Pennsylvania

EDUCATION: Coral Gables High School, Coral Gables, Florida
BA, Music, Florida State Univ., 1972
MS, Aeronautical Engineering, U.S. Naval Postgrad School, 1980

CURRENT POSITION: Deputy Director, Tactical Air Systems Dept.
Naval Air Development Center
Warminster, Pennsylvania

PARENTS: Mr. & Mrs. Alston J. Scott, Sr., Miami, Florida

MARITAL STATUS: Married to the former Marilyn K. Robinson

NAME: Steven L. Smith, Mission Specialist

BIRTHDATE/PLACE: December 30, 1958 - Phoenix, Arizona

RESIDENCE: Houston, Texas

EDUCATION: Leland High School, San Jose, California
BS, Electrical Engineering, Stanford Univ., 1981
MS, Electrical Engineering, Stanford Univ., 1982
MBA, Stanford Univ., 1987

CURRENT POSITION: Payload Flight Controller
Johnson Space Center
Houston, Texas

PARENTS: Mr. & Mrs. Robert H. Smith, San Jose, California

MARITAL STATUS: Married to the former Margaret M. Brannigan

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U.S. Gov't

NAME: Joseph R. Tanner, Mission Specialist

BIRTHDATE/PLACE: January 21, 1950 - Danville, Illinois

RESIDENCE: Houston, Texas

EDUCATION: Danville High School, Danville, Illinois
BS, Mechanical Engineering, Univ. of Illinois, 1973

CURRENT POSITION: Deputy Chief, Aircraft Operations Division
Johnson Space Center
Houston, Texas

PARENTS: Mr. & Mrs. Lewis W. Tanner, Danville, Illinois

MARITAL STATUS: Married to the former Martha A. Currie

NAME: Andrew S. W. Thomas., Ph.D., Mission Specialist

BIRTHDATE/PLACE: December 18, 1951 - Adelaide, Australia

RESIDENCE: Pasadena, California

EDUCATION: Saint Peters College, Adelaide, Australia
BE, Mechanical Engr., Univ. of Adelaide (Australia), 1972
PHD, Mechanical Engr., Univ. of Adelaide (Australia), 1978

CURRENT POSITION: Group Supervisor-Microgravity Research
Jet Propulsion Laboratory
Pasadena, California

PARENTS: Adrian C. Thomas, N. Adelaide, Australia
Mary E. Thomas, Hackham, Australia

MARITAL STATUS: Single

NAME: Mary E. Weber, Ph.D., Mission Specialist

BIRTHDATE/PLACE: August 24, 1962 - Cleveland, Ohio

RESIDENCE: Austin, Texas

EDUCATION: Bedford High School, Bedford, Ohio
BS, Chemical Engineering, Purdue Univ., 1984
PHD, Chemistry, Univ. of California-Berkeley, 1988

CURRENT POSITION: Materials Engineer
Texas Instruments (on assignment to SEMATECH)
Austin, Texas

PARENTS: Andrew M. Weber, Jr., Deceased
Joan E. Weber, Mentor, Ohio

MARITAL STATUS: Single

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NASA News

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Lyndon B. Johnson Space Center
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For Release:

Jeffrey Carr
Release No. 92-020

April 24, 1992

FLIGHT CONTROL OF STS-49

Flight control for STS-49, the maiden voyage of Endeavour, will follow the procedures and traditions common to U.S. manned space flights since 1965, when the Mission Control Center was first used.

Responsibility for conduct of flight operations will revert to the Mission Control Center (MCC) in Houston once Endeavour's two solid rocket boosters ignite. Mission support in the MCC will begin five hours prior to launch and continue through la nding.

The primary objective of mission STS-49 is to retrieve and repair the INTELSAT VI satellite, and to demonstrate EVA methods for the assembly of large orbiting structures. After being cleared for orbital operations, the crew and flight contollers in Mission Control will begin plotting and executing a series of maneuvers designed to place Endeavour in position to capture the INTELSAT VI on flight day four. Satellite controllers at the INTELSAT Control Center in Washington, D.C. will be respon sible for maneuvering the INTELSAT VI into the "control box" and de-rotating the satellite to about .6 rpm for capture. Following the capture, repair, and release of the satellite, the INTELSAT Control Center will command the newly installed perigee kick motor to propel the satellite to it's destination orbit. The MCC will continue to control flight operations throughout the remainder of the flight.

Flight operations will be conducted from Flight Control Room One (FCR-1) on the second floor of the MCC located in Bldg. 30 at the Johnson Space Center. The teams of flight controllers will alternate shifts in the control center and in nearby ana lysis and support facilities. The handover between each team takes about an hour and allows each flight controller to brief his or her replacement on developments during the previous two shifts.

The four flight control teams for this mission will be referred to as the Ascent/Entry, Orbit 1, Orbit 2, and Planning teams. The ascent and entry phases will be conducted by flight director N. Wayne Hale, Jr. The Orbit 1 team will be headed by lead flight director Granvil A. (Al) Pennington. The Orbit 2 team, will be directed by flight director Philip L. Engelauf. The Planning team will be led by J. Milt Heflin.

MCC POSITIONS AND CALL SIGNS FOR STS-49

The flight control positions in the MCC, and their responsibilities, are:

Flight Director (FLIGHT)

Has overall responsibility for the conduct of the mission.

Spacecraft Communicator (CAPCOM)

By tradition an astronaut; responsible for all voice contact with the flight crew.

Flight Activities Officer (FAO)

Responsible for procedures and crew timelines; provides expertise on flight documentation and checklists; prepares messages and maintains all teleprinter and/or Text and Graphics System traffic to the vehicle.

Integrated Communications Officer (INCO)

Responsible for all Orbiter data, voice and video communications systems; monitors the telemetry link between the vehicle and the ground; oversees the uplink command and control processes.

Flight Dynamics Officer (FDO)

Responsible for monitoring vehicle performance during the powered flight phase and assessing abort modes; calculating orbital maneuvers and resulting trajectories; and monitoring vehicle flight profile and energy levels during reentry.

Trajectory Officer (TRAJECTORY)

Also known as "TRAJ," this operator aids the FDO during dynamic flight phases and is responsible for maintaining the trajectory processors in the MCC and for trajectory inputs made to the Mission Operations Computer.

Guidance, Navigation & Control Systems Engineer (GNC)

Responsible for all inertial navigational systems hardware such as star trackers, radar altimeters and the inertial measurement units; monitors radio navigation and digital autopilot hardware systems.

Guidance & Procedures Officer (GPO)

Responsible for the onboard navigation software and for maintenance of the Orbiter's navigation state, known as the state vector. Also responsible for monitoring crew vehicle control during ascent, entry, or rendezvous.

Rendezvous Guidance and Procedures Officer (RENDEZVOUS)

The RENDEZVOUS GPO is specialist who monitors onboard navigation of the Orbiter during rendezvous and proximity operations. The UARS deploy maneuver involves an active separation, using rendezvous radar to verify separation rates, requiring the support of this specialist

Environmental Engineer & Consumables Manager (EECOM)

Responsible for all life support systems, cabin pressure, thermal control and supply and waste water management; manages consumables such as oxygen and hydrogen.

Electrical Generation and Illumination Officer (EGIL)

Responsible for power management, fuel cell operation, vehicle lighting and the master caution and warning system.

Payloads Officer (PAYLOADS)

Coordinates all payload activities; serves as principal interface with remote payload operations facilities.

Data Processing Systems Engineer (DPS)

Responsible for all onboard mass memory and data processing hardware; monitors primary and backup flight software systems; manages operating routines and multi-computer configurations.

Propulsion Engineer (PROP)

Manages the reaction control and orbital maneuvering thrusters during all phases of flight; monitors fuel usage and storage tank status; calculates optimal sequences for thruster firings.

Booster Systems Engineer (BOOSTER)

Monitors main engine and solid rocket booster performance during ascent phase.

Ground Controller (GC)

Coordinates operation of ground stations and other elements of worldwide space tracking and data network; responsible for MCC computer support and displays.

Maintenance, Mechanical, Arm & Crew Systems (MMACS)

Formerly known as RMU; responsible for remote manipulator system; monitors auxilliary power units and hydraulic systems; manages payload bay and vent door operations.

Extravehicular Activities (EVA)

A specialist responsible for monitoring and coordinating preparations for and execution of space walks. Responsibilities include monitoring suit and EVA hardware performance.

Payload Data & Retrieval System (PDRS)

A specialist responsible for monitoring and coordinating the operation of the remote manipulator system.

Flight Surgeon (SURGEON)

Monitors health of flight crew; provides procedures and guidance on all health-related matters.

Public Affairs Officer (PAO)

Provides real-time explanation of mission events during all phases of flight.

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STS-49 FLIGHT CONTROL TEAM STAFFING

POSITION	ASCENT/ENTRY	ORBIT 1	ORBIT 2	PLANNING
FLIGHT	Wayne Hale	Al Pennington	Phil Engelauf	Milt Heflin
CAPCOM	Sid Gutierrez (A) Jim Halsell (E)	Carl Walz John Casper	Sam Gemar Ken Reightler	Jeff Wisoff
FAO	Pete Hasbrook	Pete Hasbrook	Tony Griffith	Debbie Jackson
INCO	Jay Conner	Jay Conner	Harry Black	Richard LaBrode
FDO	Brian Perry (A) Bruce Hilty (E)	Mark Haynes	Phil Burley	Dick Theis
TRAJ	Ed Gonzalez (A) Carson Sparks (E)	Steve Stich	Bill Britz	Mark Riggio
GPO/Rendezvous	Jeff Bertsch (A) Glen Hillier (E)	Chris Meyer	Linda Gavin	Mark Thomas
GNC	Stanley Schaefer	Stanly Schaefer	Bradley Schoenbauer	Charles Alford
EECOM	Dave Herbek	Dave Herbek	Quinn Carelock	Dan Molina

EGIL	Brian Anderson	Brian Anderson	Robert Armstrong	Ben Pawlik
PAYLOADS	Nellie Carr	Nellie Carr	Jeff Hanley	Steve Smith
DPS	Gloria Araiza	Gloria Araiza	Gary Sham	James Hill
PROP	Tony Ceccacci	Tony Ceccacci	Thomas Lazo	Carlyle Lowe
BOOSTER	Terri Stowe (A) Ken Dwyer (E)			
GC	John Snyder John Wells	Mike Marsh Johnnie Brothers	Ed Klein Dennis Williams	Frank Stolarski Al Davis
EVA	James Thornton	James Thornton	Gerald Miller Richard Fullerton	Charles Armstrong
PDRS	Ron Zaguli	Ron Zaguli	Dave Moyer (ASEM) Albert Lee (Intelsat)	Gary Pollack
MMACS	R. Kevin McCluney	R. Kevin McCluney	Alan Bachik	Ladessa Hicks
SURGEON	Larry Pepper	Brad Beck	Phil Stepaniak	(On Call)
PAO	Kyle Herring (A) Kari Fluegel (E)	Kyle Herring	Jeff Carr	Kelly Humphries

NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
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For Release:

Barbara Schwartz
RELEASE NO. 92-027

May 19, 1992
FOR IMMEDIATE RELEASE

ASTRONAUT MELNICK TO RETIRE AND LEAVE NASA

Astronaut Bruce E. Melnick (Commander, USCG) is retiring from the U.S. Coast Guard and will be leaving NASA in July. Melnick has accepted the position of Director, Shuttle Processing Contract Process Improvement Technology with Lockheed Space Operations Co. (LSOC) at Kennedy Space Center (KSC), Fla.

"I am really honored to have been a part of the NASA team for the last 5 years and certainly will miss the close friends I have made in the Johnson Space Center family. My two opportunities to venture into space will provide me with irreplaceable memories for the rest of my life and should bring an invaluable experience base into my new position with LSOC at KSC. I am looking forward to taking on the challenges of space engineering management and family wise, this is an ideal time for us to make the move," Melnick said. He will be involved in the day-to-day processing of Space Shuttle vehicles in his new position.

Melnick flew on Space Shuttle missions STS-41 in October 1990 to deploy the Ulysses Jupiter probe and STS-49 in May 1992 to retrieve, repair and reboost the Intelsat-VI telecommunications satellite. Selected by NASA in June 1987, Melnick was NASA's first U.S. Coast Guard astronaut.

Regarding Melnick's decision to retire, Director of Flight Crew Operations Donald R. Puddy said, "Bruce has been an asset to the program, not only in his flight assignments but also in his technical assignments. He has represented the Astronaut Office at KSC in preparing the Shuttle orbiters' cockpit and middeck for missions and in assembly and checkout of the new Space Shuttle Endeavour at contractor facilities in California. We wish him the best in his new job. His background will be very beneficial to NASA in his new position."

- end -

NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
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For Release:

Barbara Schwartz
RELEASE NO. 92-028

May 21, 1992

STS-49 POSTFLIGHT CREW PRESS CONFERENCE

The STS-49 postflight crew press conference will be held at the Johnson Space Center, building 2, room 135, Friday, May 29, 1992, at 9 a.m. CDT. Crew members will narrate slides and film from their recent Intelsat-VI retrieval, repair and reboost mission, followed by a question and answer session.

News media are invited to participate on location at JSC or by two-way audio from NASA Headquarters and other centers. The briefing will be carried on NASA Select television, Satcom F2R, transponder 13, located at 72 degrees west longitude.

-end-

NASA News

National Aeronautics and
Space Administration
Lyndon B. Johnson Space Center
Houston, Texas 77058
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For Release
June 12, 1992

James Hartsfield
RELEASE NO. 92-033

NESBITT NAMED CHIEF OF PUBLIC SERVICES

Stephen A. Nesbitt has been named chief of the Johnson Space Center's Public Services Branch, Office of Public Affairs, succeeding Charles A. Biggs, who retired April 3.

Nesbitt's appointment is effective June 14. He currently is deputy chief of the Media Services Branch and has been employed at JSC for 14 years.

The Public Services Branch oversees visitor services, public correspondence, on-site and traveling exhibits and Freedom of Information Act requests. The branch also is responsible for the speaker's bureau, educational activities, community relations, and the production of public literature concerning the center's facilities, personnel and programs.

Nesbitt received a bachelor of arts degree in history from the University of Texas, Austin, in 1973, and a master of public administration degree from Angelo State University, San Angelo, Texas, in 1978. He worked as a reporter for the San Angelo Standard-Times for two years and as an information writer for the Angelo State University Public Relations Department for two years prior to joining JSC as a Presidential Management Intern.

-end-

NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release

Jeffrey Carr
Release No. 92-034

June 22, 1992

FLIGHT CONTROL OF STS-50

Flight control for STS-50, the 12th voyage of Columbia and the longest flight ever for a Space Shuttle, will follow the procedures and traditions common to U.S. manned space flights since 1965, when the Mission Control Center was first used.

Responsibility for conduct of flight operations will revert to the Mission Control Center (MCC) in Houston once Columbia's two solid rocket boosters ignite. Mission support in the MCC will begin five hours prior to launch and continue through landing.

The primary objective of mission STS-50 is to conduct over thirty experiments ranging from crystal manufacturing to studies in fluid dynamics as part of the United States Microgravity Laboratory (USML-1). After being cleared for orbital operations, and following Spacelab systems activation, USML payload operations will be managed from the Payload Operations Control Center, or POCC, at the Marshall Space Flight Center in Huntsville, Alabama.

Orbiter flight operations will be conducted from Flight Control Room One (FCR-1) on the second floor of the MCC located in Bldg. 30 at the Johnson Space Center. The teams of flight controllers will alternate shifts in the control center and in nearby analysis and support facilities. The handover between each team takes about an hour and allows each flight controller to brief his or her replacement on developments during the previous two shifts.

The flight control teams for this mission will be referred to as the Ascent/Entry, Orbit 1, Orbit 2, Orbit 3, and Orbit 4 teams. The ascent and entry phases will be conducted by flight director Jeffrey W. Bantle. The Orbit 1 team will be headed by Richard D. Jackson. The Orbit 2 team, will be directed by lead flight director Robert E. Castle, Jr. The Orbit 3 team will be led by Gary E. Coen, and the Orbit 4 team by Robert M. Kelso.

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MCC POSITIONS AND CALL SIGNS FOR STS-50

The flight control positions in the MCC, and their responsibilities, are:

Flight Director (FLIGHT)

Has overall responsibility for the conduct of the mission.

Spacecraft Communicator (CAPCOM)

By tradition an astronaut; responsible for all voice contact with the flight crew.

Flight Activities Officer (FAO)

Responsible for procedures and crew timelines; provides expertise on flight documentation and checklists; prepares messages and maintains all teleprinter and/or Text and Graphics System traffic to the vehicle.

Integrated Communications Officer (INCO)

Responsible for all Orbiter data, voice and video communications systems; monitors the telemetry link between the vehicle and the ground; oversees the uplink command and control processes.

Flight Dynamics Officer (FDO)

Responsible for monitoring vehicle performance during the powered flight phase and assessing abort modes; calculating orbital maneuvers and resulting trajectories; and monitoring vehicle flight profile and energy levels during reentry.

Trajectory Officer (TRAJECTORY)

Also known as "TRAJ," this operator aids the FDO during dynamic flight phases and is responsible for maintaining the trajectory processors in the MCC and for trajectory inputs made to the Mission Operations Computer.

Guidance, Navigation & Control Systems Engineer (GNC)

Responsible for all inertial navigational systems hardware such as star trackers, radar altimeters and the inertial measurement units; monitors radio navigation and digital autopilot hardware systems.

Guidance & Procedures Officer (GPO)

Responsible for the onboard navigation software and for maintenance of the Orbiter's navigation state, known as the state vector. Also responsible for monitoring crew vehicle control during ascent, entry, or rendezvous.

Rendezvous Guidance and Procedures Officer (RENDEZVOUS)

The RENDEZVOUS GPO is specialist who monitors onboard navigation of the Orbiter during rendezvous and proximity operations. The UARS deploy maneuver involves an active separation, using rendezvous radar to verify separation rates, requiring the support of this specialist.

Environmental Engineer & Consumables Manager (EECOM)

Responsible for all life support systems, cabin pressure, thermal control and supply and waste water management; manages consumables such as oxygen and hydrogen.

Electrical Generation and Illumination Officer (EGIL)

Responsible for power management, fuel cell operation, vehicle lighting and the master caution and warning system.

Payloads Officer (PAYLOADS)

Coordinates all payload activities; serves as principal interface with remote payload operations facilities.

Data Processing Systems Engineer (DPS)

Responsible for all onboard mass memory and data processing hardware; monitors primary and backup flight software systems; manages operating routines and multi-computer configurations.

Propulsion Engineer (PROP)

Manages the reaction control and orbital maneuvering thrusters during all phases of flight; monitors fuel usage and storage tank status; calculates optimal sequences for thruster firings.

Booster Systems Engineer (BOOSTER)

Monitors main engine and solid rocket booster performance during ascent phase.

Ground Controller (GC)

Coordinates operation of ground stations and other elements of worldwide space tracking and data network; responsible for MCC computer support and displays.

Maintenance, Mechanical, Arm & Crew Systems (MMACS)

Formerly known as RMU; responsible for remote manipulator system; monitors auxilliary power units and hydraulic systems; manages payload bay and vent door operations.

Extravehicular Activities (EVA)

A specialist responsible for monitoring and coordinating preparations for and execution of space walks. Responsibilities include monitoring suit and EVA hardware performance.

Payload Data & Retrieval System (PDRS)

A specialist responsible for monitoring and coordinating the operation of the remote manipulator system.

Flight Surgeon (SURGEON)

Monitors health of flight crew; provides procedures and guidance on all health-related matters.

Public Affairs Officer (PAO)

Provides real-time explanation of mission events during all phases of flight.

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STS-50 FLIGHT CONTROL TEAM STAFFING

POSITION	ASCENT/ENTRY	ORBIT 1	ORBIT 2	ORBIT 3	ORBIT 4
FLIGHT	Jeff Bantle	Richard Jackson	Robert Castle	Gary Coen	Rob Kelso
CAPCOM	Sid Gutierrez (A) Ken Reightler (E) Jim Halsell (A/E)	Jeff Wisoff	Rhea Seddon	Sam Gemar	Jim Halsell Bill McArthur
FAO	Gail Schneider	Gail Schneider	Mary Anne Plaza	Tracy Calhoun	Greg Smith
INCO	Harry Black	Harry Black	Chris Counts	Roberto Moolchan	Jay Conner
FDO	Ed Gonzalez (A) Doug Rask (E)	Phil Burley	Steve Stich	Dick Thies	Tim Brown
TRAJ	Matt Abbot (A) Brian Perry (E)	Don Pearson	Dan Adamo	Roger Balettie	Mark Riggio
GPO	Dennis Bentley (A) Ken Patterson (E)				
GNC	John Shannon	John Shannon	Charles Alford	Frank Trlica	Phillip Perkins
EECOM	Quinn Carelock	Quinn Carelock	Dan Molina	Leonard Riche	Pete Cerna

EGIL	Ray Miessler	Ray Miessler	Brian Anderson	Robert Armstrong	Ben Pawlik
PAYLOADS	Annette Hasbrook	Annette Hasbrook	Mark Kirasich	Sharon Conover	Joe Cavallaro
DPS	Terry Keeler	Terry Keeler	Gloria Araiza	Gary Sham	Mark Erminger
PROP	Matthew Barry	Matthew Barry	Lonnie Schmitt	Tony Ceccacci	Karen Jackson
BOOSTER	Franklin Markle (A) Michael Dingler (E)	N/A	N/A	N/A	N/A
GC	Chuck Capps Larry Foy	Henry Allen Terry Quick	Lynn Vernon Frank Stolarski	Melissa Blizzard Dennis Williams	
EVA	N/A	N/A	N/A	N/A	N/A
PDRS	N/A	N/A	N/A	N/A	N/A
MMACS	Bill Anderson	Bill Anderson	H. Karl Pohl	Alan Simon	Kevin McCluney
SURGEON	Phil Stepaniak (A/E)	Roy Marsh Denise Baisden	Brad Beck Richard Jennings	Denise Baisden Brad Beck	
PAO	James Hartsfield (A) Kyle Herring (E)	James Hartsfield Kyle Herring	Kari Fluegel Jeff Carr	Kelly Humphries Billie Deason	

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NASA News

National Aeronautics and
Space Administration
Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release

Barbara Schwartz
RELEASE NO. 92-035

June 25, 1992

ASTRONAUT CREIGHTON TO RETIRE AND LEAVE NASA

Astronaut John O. Creighton (Capt., USN) will retire from the U.S. Navy and leave NASA on July 15 to work in the Commercial Airplane Group of the Boeing Co., Seattle, Wash., beginning Sept. 1. He will work as a production test pilot and as an instructor pilot in the customer support area.

Creighton, who was selected for the astronaut program in 1978, is a veteran of three Space Shuttle missions. He piloted STS-51G, in June 1985, on which communications satellites were deployed for Mexico (Morelos), the Arab League (Arabsat) and the United States (AT&T Telstar). He was commander of Department of Defense flight STS-36, launched Feb. 28, 1990. He also commanded STS-48 in September 1991, on which the Upper Atmosphere Research Satellite was deployed.

"I have thoroughly enjoyed my time at NASA, especially working with the outstanding people here. I feel privileged to have flown on three Shuttle missions--each unique and rewarding, but then comes a point when it's time to look for a new and different challenge. I am looking forward to returning to Seattle, where I grew up, and to beginning my new career at Boeing," Creighton said.

"Our loss is Boeing's gain," said Donald R. Puddy, Director of Flight Crew Operations. "They're getting a terrific pilot and a seasoned aerospace pioneer. We will miss him, but wish him continuing success as he pursues his new career."

-end-

Release No. 92-037

Jack Riley
Johnson Space Center, Houston
(Phone: 713/483-5111)

June 30, 1992

HAWLEY TO RETURN TO JOHNSON SPACE CENTER

Dr. Steven A. Hawley, associate director of NASA's Ames Research Center since 1990, will return to Johnson Space Center Aug. 1 as deputy director of flight crew operations directorate (FCOD).

"This is a unique opportunity to return 'home' and play a part in running my old organization," Hawley said. "I have enjoyed my two years at Ames and seeing a unique part of the agency. I will miss the Ames people very much."

Prior to being named Ames' associate director in June 1990, Hawley was deputy chief of the astronaut office at JSC and served as an astronaut from 1978-1990.

Hawley, 40, flew on three space shuttle missions, logging 412 hours in space.

Hawley's hometown is Salina, Kan. He is an honors graduate of the University of Kansas and received his doctorate in astronomy and astrophysics from the University of California at Santa Cruz in 1977. He is a member of the American Astronomical Society, the Astronomical Society of the Pacific, Sigma Pi Sigma and Phi Beta Kappa. In 1988, he was awarded the NASA Exceptional Service Medal.

Hawley is married to the former Eileen M. Keegan of Redondo Beach, Calif.

"Steve's an outstanding manager, and I look forward to his return to JSC. His experience makes him well qualified to help lead the flight crew operations functions, which include recommending astronaut selections; aviation operations; payload specialist activities, both domestic and international; and operational contributions to design and development of manned spacecraft and payloads, equipment, and systems," Donald R. Puddy, director of FCOD, said.

-end-

NASA News

National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

Barbara Schwartz
RELEASE NO. 92-038

For Release
July 1, 1992

CHIEF ASTRONAUT TO RETIRE FROM NAVY AND LEAVE NASA

Capt. Daniel C. Brandenstein, chief of the astronaut office since 1986 and veteran of four Space Shuttle missions, is retiring from the U.S. Navy and leaving NASA about Oct. 1 to pursue other interests.

Brandenstein commanded and flew the new orbiter Endeavour on the recent STS-49 mission to retrieve, repair, and deploy the stranded INTELSAT-VI telecommunications satellite. During this mission, the crew conducted a record-setting four EVA's (extravehicular activity or spacewalks) to successfully rescue the satellite and to demonstrate and evaluate numerous EVA tasks to be used for the assembly of Space Station Freedom.

Selected by NASA in January 1978, Brandenstein first flew as a pilot on STS-8, the first night launch and landing in Aug.-Sept. 1983, aboard the Challenger. During the mission, crew members deployed the Indian National Satellite (INSAT-1B), operated the Canadian-built remote manipulator system (RMS) with the payload flight test article, operated the continuous flow electrophoresis system with live cell samples, conducted medical measurements to understand biophysiological effects of space flight, and activated earth resources and space science experiments.

On his second mission in June 1985, Brandenstein commanded the crew of STS-51G aboard Discovery to deploy communications satellites for Mexico (Morelos), the Arab League (Arabsat), and the United States (AT&T Telstar). Also, the RMS was used to deploy and retrieve the SPARTAN satellite after a rendezvous procedure by Brandenstein. In addition, the crew conducted a number of astronomy, materials processing, biomedical, and other experiments.

Brandenstein also commanded the crew of STS-32 in Jan. 1990 aboard Columbia to deploy the Syncom IV-F5 satellite and retrieve the Long Duration Exposure Facility using the RMS. The crew also operated a variety of life sciences and earth sciences experiments. The IMAX camera was flown on this mission and the film incorporated into "The Blue Planet" about the Earth's environment.

-more-

With 789 hours in space, Brandenstein holds the record among Space Shuttle astronauts. He also has flown four of the five orbiters, and he has more rendezvous experience than any other pilot.

During his career, Brandenstein has earned a number of achievement awards, including the NASA Distinguished Service Medals, the Defense Superior Service Medal, the Distinguished Flying Cross, NASA Outstanding Leadership Medals, Legion of Honor (France), Medal of King Abdul Aziz (Saudi Arabia), and numerous other awards and honors.

"For the past 14 years I have had the opportunity to have the most challenging and interesting job in world. It has been exciting, rewarding, and a pleasure to work with the many talented and motivated people who make up this country's space team. Although I have chosen to change careers, I will always be an avid supporter of the space efforts which I feel are essential to the advancement of knowledge and technology in this country," Brandenstein said.

"I'm sorry to see Dan go. He's one of the finest human beings I have ever had the privilege to know. He has been an outstanding astronaut, providing an example of excellence to which all others should aspire. His leadership skills are unparalleled here or elsewhere. I wish him the best in whatever he chooses to do," center director Aaron Cohen said.

Donald R. Puddy, director of flight crew operations added, "Dan's experience and expertise certainly will be missed. His many extraordinary achievements as an astronaut and exemplary performance as a manager have provided the leadership that has been very valuable to the astronaut corps, the Johnson Space Center, and NASA. I wish him continuing success as he pursues a new career."

-end-

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NASA News

National Aeronautics and
Space Administration
Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

Jeffrey Carr
Release No. 92-142

For Release
July 23, 1992

FLIGHT CONTROL OF STS-46

Flight control for STS-46, the 12th voyage of Atlantis will follow the procedures and traditions common to U.S. manned space flights since 1965, when the Mission Control Center was first used.

Responsibility for conduct of flight operations will revert to the Mission Control Center (MCC) in Houston once Atlantis's two solid rocket boosters ignite. Mission support in the MCC will begin five hours prior to launch and continue through landing.

The primary objectives of mission STS-46 are to deploy the European Retrievable Carrier (EURECA) and to demonstrate the Tethered Satellite System (TSS). The EURECA will be deployed the day after launch, on orbit 12, after which checkout of the TSS subsystems will begin in preparation for deployment of the satellite on flight day four. TSS deployed operations are scheduled over two full days.

Orbiter and payload operations will be conducted from Flight Control Room One (FCR-1) on the second floor of the MCC located in Bldg. 30 at the Johnson Space Center. The teams of flight controllers will alternate shifts in the control center and in nearby analysis and support facilities. The handover between each team takes about an hour and allows each flight controller to brief his or her replacement on developments during the previous two shifts. The Science Operations Center, located in the MCC, will be manned by the TSS science operations team led by a Science Operations Director (SOD) on alternating shifts. The SOD will be responsible for coordinating the operation of TSS science support systems and experiments during in-bay and deployed operations.

The flight control teams for this mission will be referred to as the Ascent/Entry, Orbit 1, Orbit 2, and Orbit 3 teams. The ascent and entry phases will be conducted by flight director Ron Dittemore. The Orbit 1 team will also be directed by Dittemore. The Orbit 2 team will be headed by lead flight director Chuck Shaw. The Orbit 3 team will be led by Phil Engelauf.

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MCC POSITIONS AND CALL SIGNS FOR STS-46

The flight control positions in the MCC, and their responsibilities, are:

Flight Director (FLIGHT)

Has overall responsibility for the conduct of the mission.

Spacecraft Communicator (CAPCOM)

By tradition an astronaut; responsible for all voice contact with the flight crew.

Flight Activities Officer (FAO)

Responsible for procedures and crew timelines; provides expertise on flight documentation and checklists; prepares messages and maintains all teleprinter and/or Text and Graphics System traffic to the vehicle.

Integrated Communications Officer (INCO)

Responsible for all Orbiter data, voice and video communications systems; monitors the telemetry link between the vehicle and the ground; oversees the uplink command and control processes.

Flight Dynamics Officer (FDO)

Responsible for monitoring vehicle performance during the powered flight phase and assessing abort modes; calculating orbital maneuvers and resulting trajectories; and monitoring vehicle flight profile and energy levels during reentry.

Trajectory Officer (TRAJECTORY)

Also known as "TRAJ," this operator aids the FDO during dynamic flight phases and is responsible for maintaining the trajectory processors in the MCC and for trajectory inputs made to the Mission Operations Computer.

Guidance, Navigation & Control Systems Engineer (GNC)

Responsible for all inertial navigational systems hardware such as star trackers, radar altimeters and the inertial measurement units; monitors radio navigation and digital autopilot hardware systems.

Guidance & Procedures Officer (GPO)

Responsible for the onboard navigation software and for maintenance of the Orbiter's navigation state, known as the state vector. Also responsible for monitoring crew vehicle control during ascent, entry, or rendezvous.

Rendezvous Guidance and Procedures Officer (RENDEZVOUS)

The RENDEZVOUS GPO is specialist who monitors onboard navigation of the Orbiter during rendezvous and proximity operations. The UARS deploy maneuver involves an active separation, using rendezvous radar to verify separation rates, requiring the support of this specialist

Environmental Engineer & Consumables Manager (EECOM)

Responsible for all life support systems, cabin pressure, thermal control and supply and waste water management; manages consumables such as oxygen and hydrogen.

Electrical Generation and Illumination Officer (EGIL)

Responsible for power management, fuel cell operation, vehicle lighting and the master caution and warning system.

Payloads Officer (PAYLOADS)

Coordinates all payload activities; serves as principal interface with remote payload operations facilities.

Data Processing Systems Engineer (DPS)

Responsible for all onboard mass memory and data processing hardware; monitors primary and backup flight software systems; manages operating routines and multi-computer configurations.

Propulsion Engineer (PROP)

Manages the reaction control and orbital maneuvering thrusters during all phases of flight; monitors fuel usage and storage tank status; calculates optimal sequences for thruster firings.

Booster Systems Engineer (BOOSTER)

Monitors main engine and solid rocket booster performance during ascent phase.

Ground Controller (GC)

Coordinates operation of ground stations and other elements of worldwide space tracking and data network; responsible for MCC computer support and displays.

Maintenance, Mechanical, Arm & Crew Systems (MMACS)

Formerly known as RMU; responsible for remote manipulator system; monitors auxilliary power units and hydraulic systems; manages payload bay and vent door operations.

Extravehicular Activities (EVA)

A specialist responsible for monitoring and coordinating preparations for and execution of space walks. Responsibilities include monitoring suit and EVA hardware performance.

Payload Data & Retrieval System (PDRS)

A specialist responsible for monitoring and coordinating the operation of the remote manipulator system.

Flight Surgeon (SURGEON)

Monitors health of flight crew; provides procedures and guidance on all health-related matters.

Public Affairs Officer (PAO)

Provides real-time explanation of mission events during all phases of flight.

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STS-46 FLIGHT CONTROL TEAM STAFFING

POSITION	ASCENT/ENTRY	ORBIT 1	ORBIT 2	ORBIT 3
FLIGHT	Ron Dittemore	Ron Dittemore	Chuck Shaw	Phil Engelauf
CAPCOM	Ken Reightler (A) Jim Halsell (E)	Bill McArthur	Jeff Wisoff	Sam Gemar
FAO	Neil Woodbury	Neil Woodbury	Michael Hurt	John Curry
INCO	Chris Counts	Chris Counts	Richard LaBrode	Joseph Fanelli
FDO	Matt Abbott (A) Keith Fletcher (E)	Dan Adamo	Bill Tracy	Tim Brown
TRAJ	Ed Gonzalez (A) Charles Sparks (E)	Lisa Shore	Roger Simpson	Bill Britz
GPO	Matthew Glenn (A) Dennis Bentley (E)	Linda Gavin	John Malarkey	Chris Meyer
GNC	Stanley Schaefer	Steve Elsner	Kenneth Bain	Leroy Cain
EECOM	Pete Cerna	Pete Cerna	Linda Perrine	Dave Herbek

EGIL	Robert Armstrong	Robert Armstrong	Larry Minter	Ben Pawlik
PAYLOADS	Nellie Carr	Nellie Carr	Jeff Hanley	Tim Baum
DPS	Gary Sham	Gary Sham	James Hill	Terry Keeler
PROP	William Powers	William Powers	Carlyle Lowe	Lonnie Schmitt
BOOSTER	Ken Dwyer (A/E)	N/A	N/A	N/A
GC	John Wells Lynn Vernon	Al Davis Mike Marsh	Bob Reynolds Johnnie Brothers	Frank Stolarski Melissa Blizzard
EVA	N/A	N/A	N/A	N/A
PDRS	Albert Lee	Albert Lee	Don Pallesen	Gary Pollock
MMACS	Robert Doremus	Robert Doremus	Ladessa Hicks	H. Karl Pohl
SURGEON	Roger Billica (A) Brad Beck (E)	Larry Pepper	Denise Baisden	Phil Stepaniak
PAO	Jeff Carr (A) Kari Fluegel (E)	Jeff Carr	James Hartsfield	Kyle Herring

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NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release

Barbara Schwartz
RELEASE: 92-046

August 14, 1992

ASTRONAUT SULLIVAN TO BECOME CHIEF SCIENTIST AT NOAA

Kathryn D. Sullivan, Ph.D., will be detailed to the National Oceanic and Atmospheric Administration (NOAA) as Chief Scientist, pending Senate confirmation to make this a permanent assignment. She will begin her new assignment Aug. 17.

A veteran of three space flights, Sullivan became the first spacewalking U.S. woman on her first mission, STS-41G, in Oct. 1984, when she and fellow astronaut David Leestma conducted a 3-1/2-hour extravehicular demonstration of the feasibility of refueling satellites in space. Also, the crew worked on a number of scientific Earth observations experiments.

In April 1990, Sullivan was a member of the STS-31 crew, responsible for deploying the Hubble Space Telescope and conducting a variety of middeck experiments including protein crystal growth, polymer membrane processing and the effects of weightlessness and magnetic fields on an ion arc.

More recently, Sullivan was Payload Commander on STS-45 in March 1992, the first Spacelab mission dedicated to NASA's Mission to Planet Earth to study the Earth's atmosphere.

Sullivan's activities before joining NASA in 1978 were concentrated in academic study and research. Her doctoral studies at Dalhousie University in Halifax, Nova Scotia, included participation in a variety of oceanographic expeditions, under the auspices of the U.S. Geological Survey, Woods Hole Oceanographic Institute in Massachusetts and the Bedford Institute in Dartmouth, Nova Scotia. Her research included the Mid-Atlantic Ridge, the Newfoundland Basin and fault zones off the Southern California Coast.

- more -

As an oceanography officer in the U.S. Naval Reserve, Sullivan currently holds the rank of lieutenant commander. She also was an Adjunct Professor of Geology at Rice University in Houston from 1985 to 1992.

"My 14 years at NASA have been immensely rewarding, both professionally and personally. I will take many cherished memories with me, particularly the superb people who make up the Shuttle team. I know they can craft this country an exciting spacefaring future, and I will watch their exploits with great interest and pride," Sullivan said.

"Kathy is the consummate space pioneer. Her outstanding accomplishments as an astronaut and her work as a member of the National Commission on Space have paved the way for space exploration in the 21st century. Although Kathy is moving on to another career, she leaves a legacy for all that follow. We will miss her and wish her great success in her new position," Director of Flight Crew Operations Donald R. Puddy said.

-end-

NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release:

Barbara Schwartz
RELEASE 92-047

August 27, 1992

CREW ASSIGNMENTS ANNOUNCED FOR STS-58 AND STS-61

John E. Blaha (Col., USAF) will command the Spacelab Life Sciences-2 Space Shuttle mission STS-58 scheduled for launch next summer. This mission will continue life sciences research on adaptation to microgravity in preparation for Space Station Freedom and future planetary exploration. Blaha is a veteran of three previous Space Shuttle missions, as Pilot on STS-29 in March 1989 and STS-33 in November 1989 and as Commander on STS-43 in August 1991.

Pilot on STS-58 is Richard A. Searfoss (Maj., USAF), a member of the 1990 astronaut class. This is Searfoss' first flight. William S. McArthur, Jr., (Lt. Col., USA), also from the astronaut class of 1990 and assigned to his first flight, will be a mission specialist.

Previously assigned crew members are Payload Commander M. Rhea Seddon, M.D., assigned in October 1991, and mission specialists Shannon Lucid, Ph.D., and David Wolf, M.D., both assigned in December 1991.

Three mission specialists with spacewalking experience are named to join Payload Commander Story Musgrave, M.D., on STS-61 Hubble Space Telescope servicing mission scheduled for late 1993.

They are Tom Akers (Lt. Col., USAF) who flew on STS-41 in October 1990 and STS-49 in May 1992; Jeffrey A. Hoffman, Ph.D., who flew on STS-51-D in April 1985, STS-35 in December 1990 and STS-46 in August 1992; and Kathryn C. Thornton, Ph.D., who flew on STS-33 in November 1989 and STS-49 in May 1992.

-end-

NASA News

National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release:

Barbara Schwartz
RELEASE: 92-048

September 2, 1992

PAYLOAD COMMANDER NAMED FOR IML-2 MISSION

Richard J. Hieb is named payload commander on the second flight of the International Microgravity Laboratory (IML-2) on Space Shuttle mission STS-66 scheduled for the summer of 1994. The IML series of missions provide opportunities for the international scientific community to conduct life sciences, materials sciences, atmospheric and astronomical studies in the microgravity Spacelab laboratory.

As payload commander, Hieb is responsible for coordinating all payload requirements for the mission.

Hieb is a veteran of two previous Space Shuttle missions. He was the mission specialist on STS-39, an unclassified Department of Defense flight in May 1991, and was responsible for operating the Infrared Background Signature Satellite during release and retrieval using the robot arm and as a free-flying satellite. Hieb was also a mission specialist on STS-49 in May 1992. The crew on this first flight of the new orbiter Endeavour rescued, repaired, and reboosted the stranded Intelsat VI F3 communications satellite.

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NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release

Jeffrey Carr
Release No. 92-049

September 9, 1992

FLIGHT CONTROL OF STS-47

Flight control for STS-47, the 2nd voyage of Endeavour, will follow the procedures and traditions common to U.S. manned space flights since 1965, when the Mission Control Center was first used.

Responsibility for conducting Shuttle operations will revert to the Mission Control Center (MCC) in Houston once Endeavour's two solid rocket boosters ignite. Mission support in the MCC will begin five hours prior to launch and continue through landing.

The primary objectives of mission STS-47 are to conduct joint investigations in materials processing, fluid physics, and life sciences on behalf of NASA and NASDA, the space development agency of Japan.

Orbiter operations will be conducted from Flight Control Room One (FCR-1) on the second floor of the MCC located in Bldg. 30 at the Johnson Space Center. The teams of flight controllers will alternate shifts in the control center and in nearby analysis and support facilities. The handover between each team takes about an hour and allows each flight controller to brief his or her replacement on developments during the previous two shifts.

Once a "go" for orbit operations has been declared by Mission Control, the crew will begin the activation of Spacelab subsystems and experiment devices for the start of a full week of science operations. Payload science operations will be controlled from the Payload Operations Control Center at the Marshall Space Flight Center in Huntsville, Alabama.

The flight control teams for this mission will be referred to as the Ascent/Entry, Orbit 1, Orbit 2, and Orbit 3 teams. The ascent and entry phases will be conducted by flight director Wayne Hale. The Orbit 1 team will also be directed by Al Pennington. The Orbit 2 team will be headed by lead flight director Milt Heflin. The Orbit 3 team will be led by Linda Ham.

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MCC POSITIONS AND CALL SIGNS FOR STS-47

The flight control positions in the MCC, and their responsibilities, are:

Flight Director (FLIGHT)

Has overall responsibility for the conduct of the mission.

Spacecraft Communicator (CAPCOM)

By tradition an astronaut; responsible for all voice contact with the flight crew.

Flight Activities Officer (FAO)

Responsible for procedures and crew timelines; provides expertise on flight documentation and checklists; prepares messages and maintains all teleprinter and/or Text and Graphics System traffic to the vehicle.

Integrated Communications Officer (INCO)

Responsible for all Orbiter data, voice and video communications systems; monitors the telemetry link between the vehicle and the ground; oversees the uplink command and control processes.

Flight Dynamics Officer (FDO)

Responsible for monitoring vehicle performance during the powered flight phase and assessing abort modes; calculating orbital maneuvers and resulting trajectories; and monitoring vehicle flight profile and energy levels during reentry.

Trajectory Officer (TRAJECTORY)

Also known as "TRAJ," this operator aids the FDO during dynamic flight phases and is responsible for maintaining the trajectory processors in the MCC and for trajectory inputs made to the Mission Operations Computer.

Guidance, Navigation & Control Systems Engineer (GNC)

Responsible for all inertial navigational systems hardware such as star trackers, radar altimeters and the inertial measurement units; monitors radio navigation and digital autopilot hardware systems.

Guidance & Procedures Officer (GPO)

Responsible for the onboard navigation software and for maintenance of the Orbiter's navigation state, known as the state vector. Also responsible for monitoring crew vehicle control during ascent, entry, or rendezvous.

Rendezvous Guidance and Procedures Officer (RENDEZVOUS)

The RENDEZVOUS GPO is specialist who monitors onboard navigation of the Orbiter during rendezvous and proximity operations. The UARS deploy maneuver involves an active separation, using rendezvous radar to verify separation rates, requiring the support of this specialist

Environmental Engineer & Consumables Manager (EECOM)

Responsible for all life support systems, cabin pressure, thermal control and supply and waste water management; manages consumables such as oxygen and hydrogen.

Electrical Generation and Illumination Officer (EGIL)

Responsible for power management, fuel cell operation, vehicle lighting and the master caution and warning system.

Payloads Officer (PAYLOADS)

Coordinates all payload activities; serves as principal interface with remote payload operations facilities.

Data Processing Systems Engineer (DPS)

Responsible for all onboard mass memory and data processing hardware; monitors primary and backup flight software systems; manages ~~operating routines and~~ multi-computer configurations.

Propulsion Engineer (PROP)

Manages the reaction control and orbital maneuvering thrusters during all phases of flight; monitors fuel usage and storage tank status; calculates optimal sequences for thruster firings.

Booster Systems Engineer (BOOSTER)

Monitors main engine and solid rocket booster performance during ascent phase.

Ground Controller (GC)

Coordinates operation of ground stations and other elements of worldwide space tracking and data network; responsible for MCC computer support and displays.

Maintenance, Mechanical, Arm & Crew Systems (MMACS)

Formerly known as RMU; responsible for remote manipulator system; monitors auxilliary power units and hydraulic systems; manages payload bay and vent door operations.

Extravehicular Activities (EVA)

A specialist responsible for monitoring and coordinating preparations for and execution of space walks. Responsibilities include monitoring suit and EVA hardware performance.

Payload Data & Retrieval System (PDRS)

A specialist responsible for monitoring and coordinating the operation of the remote manipulator system.

Flight Surgeon (SURGEON)

Monitors health of flight crew; provides procedures and guidance on all health-related matters.

Public Affairs Officer (PAO)

Provides real-time explanation of mission events during all phases of flight.

###

STS-47 FLIGHT CONTROL TEAM STAFFING

POSITION	ASCENT/ENTRY	ORBIT 1	ORBIT 2	ORBIT 3
FLIGHT	Wayne Hale	Al Pennington	Milt Heflin	Linda Ham
CAPCOM	Sid Gutierrez (A) Ken Reightler (E)	Bill McArthur	Sam Gemar	Don Thomas
FAO	Jennifer Price	Jennifer Price	Ann Bowersox	Pete Hasbrook
INCO	Jay Conner	Jay Conner	Harry Black	Richard LaBrode
FDO	Brian Perry (A) Deborah Kessler (E)	Bill Tracy	Steve Stich	Lisa Shore
TRAJ	Doug Rask (A) Keith Fletcher	Mark Riggio	Dick Theis	Dan Adamo
GPO	Jeff Bertsch (A) Glen Pogue (E)			
GNC	John Shannon	Bradley Schoenbauer	Leroy Cain	Phillip Perkins
EECOM	Leonard Riche	Leonard Riche	Charles Dingell	Linda Perrine

EGIL	Ray Miessler	Ray Miessler	Robert Armstrong	Larry Minter
PAYLOADS	Debra Bulgher	Debra Bulgher	Roger Galpin	Jean Costlow
DPS	Gloria Araiza	Gloria Araiza	Mark Erminger	Gary Sham
PROP	Lonny Shmitt	Lonny Shmitt	Thomas Lazo	Bill Powers
BOOSTER	Terri Stowe			
GC	John Snyder Ed Klein	Joe Aquino Bob Reynolds	John Wells Dennis Williams	Henry Allen Terry Quick
MMACS	R. Kevin McCluney	R. Kevin McCluney	Alan Bachik	Alan Simon
PAO	Kyle Herring (A) James Hartsfield (E)	Kyle Herring	Billie Deason	Kelly Humphries

# # #

James Hartsfield
Johnson Space Center
(713) 483-5111

October 14, 1992

George Diller
Kennedy Space Center, Florida
(407) 867-2468

Release No. 92-055

ATLANTIS TO MAKE EAST TEXAS STOPS EN ROUTE TO CALIFORNIA

Weather permitting, the Space Shuttle Atlantis will make an East Texas debut this weekend with a flyby of Tyler, a stop at Longview, and an overnight stay at Houston's Ellington Field as it makes a piggyback trip to Palmdale, Calif.

Atlantis will be carried atop the Boeing 747 Shuttle Carrier Aircraft from Florida's Kennedy Space Center to Rockwell's Palmdale, Calif., shuttle factory for a series of inspections and upgrades all shuttles have gone through periodically. If weather is acceptable, Atlantis will depart Kennedy at 8:30 a.m. EDT on Saturday, Oct. 17; fly by Tyler, above that city's annual Rose Parade activities, about 10:30 a.m. CDT; and land at the Gregg County Airport near Longview about 11 a.m. CDT. At Gregg County Airport, Atlantis will be received with Space Day festivities that will include local bands and dignitiaries.

Atlantis will depart Gregg County Airport at 2:30 p.m. CDT and fly to Ellington Field, arriving about 3:30 p.m. CDT. At Ellington, Atlantis will remain overnight and the public will be allowed to view the shuttle and carrier aircraft parked in front of NASA's Hangar 990 until 10 p.m. CDT. Atlantis is scheduled to leave Ellington at about 8 a.m. CDT Sunday, Oct. 18, land at Biggs Army Air Field in El Paso for a brief refueling stop about 9:30 a.m. MDT and arrive at Palmdale about 1:10 p.m. PDT.

Atlantis will remain at Palmdale for about a year, with a return to Florida planned in late September 1993. At Palmdale, Atlantis will undergo a series of structural inspections and modifications. Several items of updated and new equipment will be installed that will make it equivalent in capability to Endeavour, NASA's newest shuttle, and which

- more -

will enable the accomplishment of the first NASA mission to dock with the Russian Space Agency's Mir Space Station.

The upgrades include a drag chute to aid in landings; improvements to the auxiliary power units, generators that are used to power the hydraulics onboard which in turn operate the elevons, ailerons, rudder and brakes; the addition of a fifth set of hydrogen and oxygen tanks that will enable Atlantis to stay in space for longer periods by allowing more storage of the substances used to generate electricity on board; the addition of an updated galley, or kitchen, which allows additional food storage space; the addition of another tank of nitrogen aboard to allow a larger supply of breathing air for the crew; a regenerative system that will add more capability to filter carbon dioxide from the cabin atmosphere; and a change in connections that will allow Atlantis to fly with either the current model shuttle toilet aboard or an improved toilet designed to allow a larger capacity for storing waste. After the upgrades, Atlantis will be able to remain in space for as long as 10 days.

After its return to Florida, Atlantis' next flight will be Shuttle mission STS-63, tentatively set for a March 1994 launch. STS-63 will carry the Lidar in Space Technology Experiment-1 (LITE-1), an instrument that would emit laser energy into the upper atmosphere of Earth and measure various aspects of the atmosphere, such as cloud top heights, densities, aerosol amounts and temperatures. The astronaut crew for STS-63 has not yet been assigned.

Later, Atlantis will be outfitted with the remaining equipment, including a Russian-built docking mechanism, needed to dock with the Russian Space Agency Space Station Mir. Atlantis is scheduled to dock with Mir on a joint U.S.-Russian flight planned in the spring of 1995.

-end-

NASA News
National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release:

Barbara Schwartz
RELEASE NO.: 92-057

October 27, 1992

MISSION SPECIALISTS NAMED FOR IML-2 MISSION

Leroy Chiao, Ph.D., and Donald A. Thomas, Ph.D., are assigned as mission specialists on the International Microgravity Laboratory-2, Space Shuttle mission STS-65, scheduled for June 1994

"Both Don and Leroy bring strong materials science backgrounds to the IML-2 payload crew. Their strengths will complement the previously assigned crew members in achieving the multi-science objectives of this important international mission," said Acting Director of Flight Crew Operations Steven A. Hawley.

Chiao, 32, holds a Ph.D. degree in chemical engineering from the University of California. Born in Milwaukee, Wisc., he considers Danville, Calif., his hometown. Chiao was selected by NASA in 1990. He has worked on Space Shuttle flight software verification in the Shuttle Avionics Integration Laboratory and currently is working crew equipment issues in the Mission Development Branch of the Astronaut Office.

Thomas, 37, has a doctorate degree in materials science from Cornell University. His dissertation involved evaluating the effect of crystalline defects and sample purity on the superconducting properties of niobium. He was born in Cleveland. Thomas, also in the astronaut class of 1990, has worked on issues relating to the Shuttle orbiter systems in the Safety and Operations Development Branches of the Astronaut Office. He currently is serving as a CAPCOM, an astronaut in the Mission Control Center who communicates with the Space Shuttle crew members during a mission.

Other crew members previously named to this microgravity mission are Payload Commander Richard J. Hieb and Chiaki Mukai, Ph.D. and M.D., a payload specialist from the National Space Development Agency of Japan.

-end-

NASA News

National Aeronautics and
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Houston, Texas 77058
AC 713 483-5111

For Release

Barbara Schwartz
October 28, 1992

RELEASE NO. 92-059

NASA NAMES CREW FOR STS-60 MISSION WITH COSMONAUT

Charles F. Bolden, Jr. (Col., USMC) will command Space Shuttle mission STS-60 in November 1993. Other crew members are pilot Kenneth S. Reightler, Jr. (Capt., USN), and mission specialists Franklin R. Chang-Diaz, Ph.D., N. Jan Davis, Ph.D., Ronald M. Sega, Ph.D., and an experienced Russian cosmonaut.

"This flight is a significant milestone in future space exploration from a scientific research standpoint as well as being the first step in our cooperative agreements with our Russian partners. We can expect tremendous accomplishments from this group of individuals, considering the outstanding credentials and backgrounds they bring to this mission," said Acting Director of Flight Crew Operations Steven A. Hawley.

Bolden, 46, piloted two Space Shuttle missions, STS-61C in January 1986 and STS-31 in April 1990, and commanded the Atmospheric Laboratory for Applications and Science mission STS-45 in March 1992. In addition to his flight experience, Bolden has held a number of management positions since his selection as an astronaut in 1980.

Most recently, Bolden was appointed Assistant Deputy Administrator at NASA Headquarters in Washington, D.C., in April. Bolden was born in Columbia, S.C., and has a bachelor of science degree in electrical science from the U.S. Naval Academy and a master of science degree in systems management from the University of Southern California.

Reightler, 41, was Pilot on Space Shuttle mission STS-48 on which the crew successfully deployed the Upper Atmosphere Research Satellite. Born in Patuxent River, Md., Reightler considers Virginia Beach, Va., to be his hometown.

- more -

Selected by NASA in June 1987, Reightler's current assignment is Chief of the Mission Support Branch in the Astronaut Office and Lead CAPCOM in Mission Control, responsible for communications with Space Shuttle crew members during flight. Reightler has master of science degrees in aeronautical engineering from the U.S. Naval Postgraduate School and in systems management from the University of Southern California.

Chang-Diaz, 42, is a veteran of three space flights -- STS-61C in January 1986, STS-34 in October 1989 and STS-46 in August 1992. Selected to become an astronaut in 1980, Chang-Diaz has a doctorate in applied plasma physics from the Massachusetts Institute of Technology. He was born in San Jose, Costa Rica.

Davis, 38, flew on STS-47 Spacelab-J, a cooperative mission with the National Space Development Agency of Japan, in September 1992. Davis was born in Cocoa Beach, Fla., but considers Huntsville, Ala., to be her hometown. Selected to become an astronaut in June 1987, Davis has a doctorate in mechanical engineering from the University of Alabama, Huntsville.

Sega, 39, was selected in January 1990 and has a doctorate in electrical engineering from the University of Colorado. This will be his first space flight. Sega is an Adjunct Professor of Physics at the University of Houston and is a Co-Principal Investigator of the Wake Shield Facility which is manifested for this flight. Born in Cleveland, Sega considers Northfield, Ohio, and Colorado Springs, Colo., to be his hometowns.

An experienced cosmonaut will fly aboard the STS-60 Space Shuttle mission. The Russian Space Agency has nominated Col. Vladimir G. Titov and Sergei K. Krikalev to undergo mission specialist training. One cosmonaut will be designated the prime crew member and the other designated backup crew member. The cosmonauts will arrive at the Johnson Space Center in early November.

Mission objectives include a number of microgravity experiments in SPACEHAB-2, the Wake Shield Facility experiment to test the creation of an ultra-vacuum in which to produce extremely pure thin film crystals for industrial uses ranging from microelectronics to lasers and superconductivity, a Capillary Pumped Loop Experiment to study a method of heat dissipation in space and a number of small experiments known as Getaway Specials flown in a bridge assembly in the orbiter's payload bay. Additionally, Russian Space Agency-sponsored life science activities will be included in the mission.

- end -

NASA News

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For Release:

Kari Fluegel October 29, 1992

RELEASE: 92-060

PAYLOAD SPECIALIST SELECTED FOR SECOND LIFE SCIENCES MISSION

NASA today announced the selection of Dr. Martin J. Fettman, D.V.M., as the prime payload specialist for the second Spacelab Life Sciences mission (SLS-2) scheduled for launch in August 1993.

"NASA's series of SLS missions play a central role in our program of space biomedical research," said Dr. Lennard A. Fisk, Associate Administrator for the Office of Space Science and Applications. "The experiments that Dr. Fettman and his fellow SLS-2 crew members conduct will give us valuable information on how living and working in space affects the human body."

Fettman, a professor in the Department of Pathology in Colorado State University's College of Veterinary Medicine, will join the previously named STS-58 crew consisting of Commander John Blaha, Col., USAF; Pilot Richard Searfoss, Maj., USAF; Payload Commander Rhea Seddon, M.D., and mission specialists William S. McArthur Jr., Lt. Col. USA; Shannon Lucid, Ph.D., and David Wolfe, M.D.

Jay Buckey, M.D., assistant professor at the University of Texas Southwestern Medical Center in Dallas, and Laurence Young, Sc.D., professor of aeronautics and astronautics at Massachusetts Institute of Technology, will serve as alternate payload specialists and will be the primary communicators with the payload crew during the 13-day mission focusing on the effects of microgravity on the human body. Buckey and Young also will train with the crew so they could substitute should Fettman become unable to fly.

The SLS-2 mission is the second in a series of Spacelab Life Sciences flights. SLS-1, June 5-14, 1991, provided an opportunity for scientists to study the effects of weightlessness in a comprehensive interrelated fashion using both human and animal subjects.

- more -

Most of the experiments assigned to SLS-2 are extensions of the data collection started on SLS-1. A total of 14 experiments will be flown, concentrating on the cardiovascular/cardiopulmonary systems, neuroscience, regulatory physiology and the musculoskeletal system.

Several NASA centers and organizations are involved in the development of the SLS-2 payload. Human experiments are being developed by the Life Sciences Project Division at the Johnson Space Center (JSC), Houston, while the non-human experiments are being developed by the Space Life Sciences Payloads Office at the Ames Research Center, Mountain View, Calif.

The program is managed by NASA's Office of Space Science and Applications, Washington, D.C. Gary W. McCollum is the SLS-2 Program Manager, and Dr. Frank M. Sulzman is the Program Scientist.

Mission Scientist is Dr. Howard J. Schneider, and Mission Manager is Kathryn E. Newkirk, both of JSC.

- end -

NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
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AC 713 483-5111

For Release

David W. Garrett
Headquarters, Washington, D.C.
(Phone: 202/453-8400)

October 30 , 1992
4 p.m. EST

Brian Welch
Johnson Space Center, Houston
(Phone: 713/483-5111)

RELEASE: C92-18

NASA AWARDS JSC INFORMATION SYSTEMS CONTRACT

NASA today announced the selection of Grumman Technical Services Division, Titusville, Fla., a subsidiary of Grumman Corp., Bethpage, N.Y., for negotiations leading to the award of a 5-year Information Systems Contract (ISC) at the Johnson Space Center (JSC), Houston.

The total cost for the 5-year period of performance, which begins Jan.1, 1993, is in excess of $300 million. The contract will be awarded on a cost-plus-award fee basis.

The contract work covers Federal Information Processing resources in support of institutional systems at the Houston space center and includes virtually all computing work other than direct mission support.

The ISC will provide data systems (hosts) maintenance and operations, personal workstation installation and maintenance, customer services, networks and telecommunications services, development engineering and integration and applications software development and maintenance for JSC's wide array of institutional information systems. The contract will be administered by JSC's Information Systems Directorate.

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NASA News

National Aeronautics and
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AC 713 483-5111

For Release:

Bill Livingstone
Headquarters, Washington, D.C.
(Phone: 202/453-1898)

Nov. 10, 1992

RELEASE: 92-201

GOLDIN DESCRIBES NASA'S NEW COMMERCIALIZATION OFFICE

NASA Administrator Daniel S. Goldin announced today details about the purpose and operations of the newly created Office of Advanced Concepts and Technology, declaring it will pursue innovative ideas and high leverage technology that both fulfill NASA's needs and have significant commercial possibilities.

"NASA can be a leading force for creativity, innovation and boldness in American society just as it was during the days of Apollo, when America reigned supreme in the world of technology because we were on the cutting edge," he said in an address to the Washington Space Business Roundtable.

The new office will not be a simple "stapling together" of previous commercial program and space technology activities, but an "entirely new breed -- a highly flexible, customer-driven organization," Goldin said.

The NASA Administrator said the new office will have four primary functions that will satisfy the currently unmet needs of the industry, academic and NASA communities.

First is a systems engineering team capable of judging the feasibility and cost of highly innovative ideas.

"Currently, there is no place in NASA where someone with an advanced concept can go to get an idea properly considered and evaluated. Furthermore, in the rush to bend metal, there usually is little consideration of operations or life cycle costs," the NASA Administrator said.

- more -

Avoiding 'Hobby Shops" for Real Opportunity

Such an advanced systems engineering function will help bridge the gap between technology development and commercial applications "so we avoid ending up with 'hobby shops' that aren't aligned with customers' needs, while commercial opportunities fall by the wayside."

In its second major function, the office will be the agency's "front door" for businesses that seek NASA expertise in developing new ideas and technologies. This "one-stop shopping" center also will serve universities and even NASA program offices, Goldin said. Currently people with new ideas often are shuffled from office to office.

The third major function will be to transfer technology into the commercial sector at a faster pace.

"We will seek the input of the technology user community to figure out the best mechanisms to transfer technology, whether it's technical papers, NASA-generated software, regional tech transfer centers, cooperative research agreements or working in our labs and other facilities," Goldin said.

The office will welcome new ideas from any source, the NASA chief said.

"We want to abolish the 'not invented here' syndrome which breeds insularity and fails to seize the good ideas within and outside of NASA."

NASA Devoted to Creation of Commercial Space Sector

The fourth function will be to stimulate commercial space activity. He distinguished between "privatization," in which functions now performed by government for itself are performed by private firms with the government as the customer, and true space commerce in which products and processes related to space are developed by commercial firms and sold in commercial markets.

"For everyone who's worried about the American economy being stuck in a rut, it's vital that we remember the tremendous power of technology to produce growth. Remember the tremendous push NASA gave the computer chip and software sector," Goldin said.

Goldin said that revolutionary space technologies "hold the promise of astounding commercial application." He listed virtual reality, powerful lighter-weight plastics and ceramics, microsensors, artificial intelligence and integrated opto-electronics for controls and navigation.

"Developing new technology is what drives this country forward. It raises our standard of living by creating the new industries and new jobs of tomorrow. I believe America today is crying out for organizations like NASA to step up to the challenge of developing cutting-edge, dual-use technology that can both keep America pushing outward into space and put Americans back to work," the NASA Administrator declared.

- end -

NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
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For Release:

Bill Livingstone
Headquarters, Washington, D.C.
(Phone: 202/453-1898)

November 12, 1992

RELEASE: 92-202

GOLDIN ANNOUNCES PERSONNEL ACTIONS AT HEADQUARTERS

NASA Administrator Daniel S. Goldin today announced that Paul F. Holloway, in addition to his responsibilities as Director of Langley Research Center (LaRC), Hampton, Va., temporarily will be assigned to NASA Headquarters as a special assistant to the Administrator.

"Paul has a distinguished record of service with NASA and has provided unparalleled leadership at Langley. I'm very pleased to announce his new position as special assistant at Headquarters, where he will be intimately involved with the day-to-day operations of the agency," said Goldin.

Holloway was appointed Director of LaRC in October 1991, where he was responsible for the Center's aeronautical and space research programs, as well as facilities and administration of the center's 3,000 civil service employees. Prior to his appointment as Director, he was Deputy Director of Langley since 1985.

He joined the Langley staff in 1960 as an aerospace research engineer and served in various positions including Chief, Space Systems Div. and Director for Space. His research work has been in hypersonic aerodynamics, boundary layer transition and flow separation, analysis of entry flight mechanisms and Earth orbital and planetary space missions.

He earned a bachelor's of science degree in aeronautical engineering from Virginia Polytechnic Institute in 1960 and did graduate study in physics at the College of William and Mary. He is a Fellow of the American Institute of Aeronautics and Astronautics and the American Aeronautical Society.

- more -

Assistant Administrator for Procurement

Goldin also announced today that Don G. Bush, Assistant Administrator for Procurement, would be leaving the agency on Jan. 11, 1993. Bush, who joined the agency in 1990 after numerous assignments in the Defense Department, plans to pursue opportunities in the private sector.

"Don has done an outstanding job as the Assistant Administrator for Procurement, forging ahead NASA's procurement reform program that began about 18 months ago. Clearly the agency will miss him," said Goldin.

"My association with the procurement professionals at NASA has been a very rewarding experience," said Bush. "I will miss being with them for the exciting times as many of my favorite procurement initiatives come to fruition. But, there comes a time when one must move on to other interests."

Prior to his appointment as NASA Assistant Administrator for Procurement, Bush held positions as Special Assistant and the Deputy Assistant Administrator for Procurement.

Before joining NASA, he served on active duty with the U.S. Air Force in all aspects of contracting and manufacturing operations, holding various procurement assignments within the Air Force Logistics Command (AFLC) and at AFLC Headquarters in base level procurement and central procurement policy. He served as an administrative contracting officer in Thailand and then as Head of Production for Defense Contract Administration Services for the state of Wisconsin.

After an assignment as Procuring Contracting Officer and Director of Subsystems in the A-10 Aircraft Systems Program Office, he returned to AFLC to head their major program/policy acquisition strategy office. He subsequently served in the Pentagon as Head of Major Weapon System Contract Policy and as Deputy Director of Contracting and Manufacturing Policy in the Office of the Assistant Secretary for Acquisition.

Bush earned a bachelor's of science degree in industrial engineering from the University of Kentucky and a master's of science degree in logistics management from the Air Force Institute of Technology.

-end-

NASA News

National Aeronautics and
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AC 713 483-5111

For Release:

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(Phone: 202/453-8613)

November 16, 1992

Paula Cleggett-Haleim
Headquarters, Washington, D.C.
(Phone: 202/358-0883)

Franklin O'Donnell
Jet Propulsion Laboratory, Pasadena, Calif.
(Phone: 818/354-5011)

RELEASE: 92-205

NASA, CRAY TO JOIN IN PARALLEL SUPERCOMPUTER RESEARCH

NASA is collaborating with Cray Research, Inc., Eagan, Minn., to conduct joint research and development activities using the company's most powerful supercomputer.

The partnership is a NASA response to the multi-agency High Performance Computing and Communications program, a bold national initiative to advance U.S. capabilities in supercomputing.

The computer will be located at NASA's Jet Propulsion Laboratory (JPL), Pasadena, Calif., with the California Institute of Technology, Pasadena, as a collaborator in the project.

"The Cray T3D system, together with our expertise in parallel processing, will allow us to tackle new computational problems in Earth and space sciences," said Dr. Carl Kukkonen, Supercomputing Project Manager at JPL.

"More importantly, we will be able to feed back JPL's and Caltech's experiences to Cray and thus, contribute to maintaining U.S. leadership in supercomputing," Kukkonen added.

- more -

"This collaboration will help us address the grand challenges of Earth and space sciences -- analyzing the enormous data sets from NASA's Earth and planetary missions," said Joseph Bredekamp of the Office of Space Science and Applications, NASA Headquarters. "We expect that 20 to 25 percent of our scientific computing will be performed on parallel computers within 3 years."

NASA Applications

JPL will use the new Cray T3D system for applications that require high-power computers -- turning planetary data from spacecraft into three-dimensional animations; electromagnetic simulations for the design of communications antennas; analyzing Earth satellite data; studying the dynamics of chemical reactions and the flow of space plasmas; and computational fluid dynamics.

"NASA is committed to being an early user of new parallel supercomputers, and Cray will be an important player," said Lee Holcomb, Director for the High Performance Computing and Communications program at NASA Headquarters.

In the fall of 1993, JPL will receive a Cray T3D system, the company's new "massively parallel" supercomputer. The innovative machine uses 256 processors to reach a peak speed of 38 billion floating point mathematical operations per second, making it Cray's most powerful computer. The effort involves JPL, Cray and the California Institute of Technology (Caltech), Pasadena.

Center Of Excellence

Cray has designated JPL/Caltech as one of four "Cray Centers of Excellence in Parallel Computing." Under this program, the company will locate staff engineers at JPL to carry out joint research in parallel computing techniques.

Cray President John Carlson said the company chose JPL as a site for its Center of Excellence program "because of the great expertise developed at JPL and the Caltech campus in parallel computation."

The project is funded by NASA's Office of Aeronautics and Office of Space Science and Applications, Washington, D.C.

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NASA News
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Barbara Schwartz
RELEASE NO. 92-067

For Release:
November 30, 1992
10 a.m. CST

COHEN NAMES LEESTMA TO TOP FLIGHT CREW OPERATIONS POSITION

Johnson Space Center director Aaron Cohen has named astronaut David C. Leestma director of Flight Crew Operations (FCOD), effective immediately.

"This job requires a multi-dimensional person who can manage astronaut and payload specialist activities, aviation operations, and safely make expert technical decisions regarding human spaceflight, resolving issues with vehicle systems, payloads, experiments, crew equipment, and flight rules, while bringing to fruition program goals. I chose Dave from a group of exemplary candidates--and it was major competition--because he has demonstrated his ability to do this job and do it well," said Cohen.

Leestma, 43, a Navy captain, is currently deputy chief and acting chief of the Astronaut Office. He was deputy director of FCOD from February 1990 until September 1991, when he left that position to train for his third Space Shuttle mission. Leestma flew as a mission specialist on STS 41-G in October 1984, performing a space walk with Kathryn Sullivan, Ph.D., to demonstrate the feasibility of refueling satellites in space. He also was a mission specialist on STS-28, a classified Department of Defense mission, in August 1989, and STS-45, the Atmospheric Laboratory for Applications and Science spacelab mission, in March 1992.

Between the three space flights, Leestma had other technical and management assignments. He was chief of the Mission Development Branch in the Astronaut Office, responsible for assessing the design, preparation, modifications, safety and certification requirements of payloads to be flown on the Shuttle. He worked in the Mission Control Center as capsule communicator (CAPCOM) from January to November 1985.

Leestma was a Naval flight officer and operational test director before his selection as an astronaut in 1980. He has logged over 3,500 hours of flight time and is a life member of the Association of Naval Aviation. He graduated first in his class from the U.S. Naval Academy and went on to earn a master of science degree in aeronautical engineering from the U.S. Naval Postgraduate School.

-more-

"Dave's varied experience and record of achievements speak for themselves. He has the necessary leadership skills, hands-on technical expertise, and practical experience for this key position. I am confident that he will work well with Agency officials, international partners, the science community. and aerospace industry officials to accomplish the ambitious human spaceflight goals," said Cohen.

-end-

U.S. Gov't

NASA News
National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release:
December 3,1992

Mark Hess
Headquarters, Washington, DC
(Phone: 202/453-4164)

Barbara Schwartz
Johnson Space Center, Houston
(Phone: 713/483-5111)

NASA ANNOUNCES SHUTTLE ASSIGNMENTS

Veteran NASA astronauts Richard O. Covey and Kenneth Bowersox and ESA astronaut Claude Nicollier have been named to the crew for STS-61, the Hubble Space Telescope (HST) servicing mission.

Covey (Col., USAF) will be commander of the mission and Bowersox (Commander, USN) will be the pilot. Nicollier will be a mission specialist. The three join other crew members previously named to the STS-61 flight: payload commander Story Musgrave, M.D., and mission specialists Tom Akers (Lt. Col., USAF), Jeffrey A. Hoffman, Ph.D., and Kathryn D. Thornton, Ph.D.

This will mark Covey's fourth Space Shuttle mission. He flew as pilot on missions STS-51 in 1985, and STS-26 in 1988, the return to flight following the Challenger accident. Covey was mission commander of STS-38 in 1990. Bowersox will be making his second flight, having previously flown on STS-50 this past June, the longest Shuttle mission to date.

Nicollier will be making his second flight aboard the Shuttle, having flown recently on the STS-46 mission in July.

The Hubble Space Telescope program is an international cooperative project between NASA and the European Space Agency.

Brinkley Named STS-61 Mission Director

Also named today is Randy Brinkley to serve as STS-61 Mission Director for the Office of Space Flight (OSF). Brinkley is currently special assistant to OSF Associate Administrator Jeremiah Pearson and will take on the additional duties for the late 1993 mission to service the Hubble Space Telescope.

- more -

"I've told Randy to work with any and all members of the multi-organizational HST team, to ensure the success of this extremely complex and important mission," said Pearson. "He has full authority to act for me in this regard."

Brinkley (Col, USMC, ret.) spent 25 years in the Marine Corps as an officer and a pilot. As a marine aviator, he accumulated over 4,000 accident free hours and flew in 42 different types of aircraft.

He was flight qualified in both the F/A-18 and AV8B (Harrier). He commanded an F-4 squadron and the Marine Corps largest F/A-18 air group.

A graduate of the University of North Carolina in 1965, Brinkley also holds masters degrees in Business Administration (MBA), International Relations and National Security and Strategic Studies.

Upon retiring from the Marine Corps as a Colonel in 1990, he joined the McDonnell Douglas Aircraft Co., and assumed the leadership role as Manager of the company's Strategic Evaluation and Studies Team.

Brinkley was named special assistant to Gen. Pearson in August, 1992.

Chief and Deputy Named for Astronaut Office

NASA today also announced that Robert L. "Hoot" Gibson (Captain, USN) has been named chief of the Astronaut Office at the Johnson Space Center. Gibson replaced Dan Brandenstein who left NASA this past October.

Gibson is a four-time veteran of Space Shuttle missions. He has flown as pilot on missions 41-B in 1984, and commanded STS 61-C in 1986, STS-27 in 1988 and commanded the STS-47 mission conducted in September. Gibson also holds the world altitude record - 27,040 feet - in an international class (660 to 1100 pounds) C-1A piston engine aircraft.

Loren Shriver (Col., USAF) has been named deputy chief of the Astronaut Office. Shriver has flown on three Shuttle missions. Shriver flew as pilot on STS 51-C in 1985, and commanded the HST deploy mission, STS-31 in 1990, and the Tether Satellite System mission, STS-46 in July. Shriver recently has been the acting deputy chief of the Astronaut Office.

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NASA News

National Aeronautics and
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Washington, D.C. 20546
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ISY

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Barbara Schwartz
Johnson Space Center, Houston
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For Release
December 8, 1992

RELEASE: 92-218

NASA ANNOUNCES SPACE SHUTTLE CREW ASSIGNMENTS

Veteran NASA astronauts Richard O. Covey and Kenneth Bowersox and ESA astronaut Claude Nicollier have been named to the crew for STS-61, the Hubble Space Telescope (HST) servicing mission.

Covey (Col., USAF) will be the mission Commander, and Bowersox (Commander, USN) will be the Pilot. Nicollier will be a mission specialist. The three join other crew members previously named to the STS-61 flight: Payload Commander Story Musgrave, M.D., and mission specialists Tom Akers (Lt. Col., USAF), Jeffrey A. Hoffman, Ph.D., and Kathryn D. Thornton, Ph.D.

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- more -

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A graduate of the University of North Carolina in 1965, Brinkley holds masters degrees in Business Administration, International Relations and National Security and Strategic Studies.

The Hubble Space Telescope program is an international cooperative project between NASA and the European Space Agency.

Chief and Deputy Named for Astronaut Office

NASA today also announced that Robert L. "Hoot" Gibson (Captain, USN) has been named Chief of the Astronaut Office at the Johnson Space Center, Houston. Gibson replaced Dan Brandenstein who left NASA in October.

Gibson is a four-time veteran of Space Shuttle missions. He has flown as Pilot on missions STS-41B in 1984 and Commanded STS-61C in 1986, STS-27 in 1988 and the STS-47 mission conducted in September. Gibson also holds the world altitude record - 27,040 feet - in an international class (660 to 1100 pounds) C-1A piston engine aircraft.

Loren Shriver (Col., USAF) has been named Deputy Chief of the Astronaut Office. Shriver has flown on three Shuttle missions. Shriver flew as Pilot on STS-51C in 1985 and commanded the HST deployment mission, STS-31 in 1990, and the STS-46 Tether Satellite System mission in July. Shriver recently has been the acting Deputy Chief of the Astronaut Office.

-end-

NASA News

National Aeronautics and
Space Administration
Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release:
January 5, 1993

Barbara Schwartz
Release No. 93-001

CARR NAMED CHIEF OF MEDIA SERVICES

Jeffrey E. Carr has been named chief of the Johnson Space Center's Media Services Branch, Office of Public Affairs, succeeding John E. Riley, who retired Dec. 31, 1992.

The Media Services Branch oversees all news media relations including press conferences and interviews; operating the JSC news center; preparing and issuing news releases; responding to news media queries; and approving contractor press releases. Additionally, the branch is responsible for publishing the employee newspaper and providing mission commentary during space flight missions.

The branch is also responsible for coordinating all audiovisual resources, maintaining historical documentation, providing research and editing services, and distributing still photographs, motion picture, and audio and video products to the communications industry.

Carr received a bachelor of science degree in communications from the University of Texas, Austin, in 1982, majoring in radio, television, and film. After graduation he came to work at JSC as a media producer and technical director for Media Services Corporation, the media contractor for the Public Affairs Office. He joined McDonnell-Douglas Technical Services Company in 1984 in support of the Shuttle Program Office, conducting NASA television network planning and operations, and returned to Media Services Corporation in 1985.

Since joining NASA in 1987, Carr has served as a mission commentator and public affairs officer for Flight Crew Operations and Mission Operations, and acting manager of mission commentary.

Carr is married to the former Nellie Lee Needham, a Shuttle payloads engineer, and is the son of former astronaut Gerald P. Carr and attorney JoAnn Ruth Petrie Carr. The Carrs reside in Seabrook, TX.

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NASA News

National Aeronautics and
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Barbara Schwartz
Release No. 93-003

For Release:
January 6, 1993

SHUTTLE CREW TO TEACH PHYSICS OF TOYS DURING MISSION

The STS-54 Space Shuttle astronauts will teach "Physics of Toys" to elementary level students during their mission scheduled to launch Jan. 13. Assuming an on-time launch, the live event is scheduled at 11:15 a.m. CST on Jan. 15.

In addition to their primary payload of a Tracking and Data Relay Satellite, the crew will carry a collection of children's toys for this educational project. Through telephone and television links, students at four schools around the country will talk with the astronauts while they are in space and discover how the toys function differently in the classroom compared to those on the Shuttle.

The schools are Thomas A. Edison Elementary, Willoughby, OH; Sacred Heart School, The Bronx, NY; Shaver Elementary School, Portland, OR; and Westwood Elementary, Flint, MI. The schools are located in the hometowns of the astronauts.

Teachers have used toys to help teach basic and advanced scientific principles and concepts of force, motion, and energy because many toys use these principles to function. By using toys, teachers are able to capture students' interest and to extend their experiences into new learning.

The astronauts, using toys, will be able to show the toy actions independent of the gravity vector, often an important force governing toy performance. Earth orbit provides an ideal classroom to study toys and observe subtle actions that are masked by gravity.

A list of toys to be flown is attached. The toys that will be used during the live lessons are the car and track, klacker balls, basketball, magnetic marbles, swimmers, mouse, gravitrons, and balloon helicopter. The entire collection of toys will be videotaped for an educational program to the distributed to schools in the Fall of 1993.

Carolyn Sumners, Ed.D., director of astronomy and physics at the Houston Museum of Natural Science in Houston, is the sponsor of this project. She developed the Toys in Space project which was first flown on STS 51-D in April 1985 that resulted in one of the most popular educational resources NASA has offered to schools.

Mission coverage, including the lessons, is in the public domain and is carried on NASA Select television, SATCOM F2R, transponder 13, at 72 degrees west longitude.

-end-

NASA News

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For Release:

Barbara Schwartz
Release No. 93-004

January 21, 1993

STS-54 POSTFLIGHT CREW PRESS CONFERENCE SCHEDULED

The STS-54 postflight crew press conference is scheduled for Monday, Feb. 1, at 3 p.m. CST, in building 2, room 135, at the Johnson Space Center.

Crew members will narrate slides and film from their recent mission. During their Space Shuttle flight, they deployed a communications satellite, acquired data on the remnants of a super nova in our galaxy, performed a spacewalk, conducted more scientific experiments to help the medical community improve medical treatment here on Earth, and interacted with elementary students, teaching physics lessons using toys to demonstrate various principles of motion.

News media are invited to participate on location at JSC or by two-way audio from NASA Headquarters and other centers. The briefing will be carried on NASA Select television, SATCOM F2R, transponder 13, located at 72 degrees west longitude.

NASA News

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For Release:

James Hartsfield
RELEASE: 93-010

February 17, 1993

SPACEWALK ADDED TO APRIL SPACE SHUTTLE FLIGHT

A spacewalk has been added to Space Shuttle mission STS-57 aboard Endeavour, set for an April launch, as part of a series of spacewalk tests NASA will conduct during the next three years to prepare for the construction and maintenance of Space Station Freedom.

The main objectives of the STS-57 mission are to retrieve the European Retrievable Carrier (EURECA) deployed during a Shuttle flight in August 1992 and to conduct research in the Spacehab module which more than doubles the amount of middeck research locker space aboard the orbiter.

In addition to accomplishing the general objectives of the spacewalk test series, the STS-57 extravehicular activity (EVA) will allow some of the spacewalking procedures, using the Shuttle's mechanical arm, planned for use in servicing the Hubble Space Telescope (HST), to be tested. Those procedures involve work by astronauts on a platform at the end of the Shuttle's arm. The arm will be aboard Endeavour for grappling the EURECA satellite.

"The EVA will benefit us in two ways: first, we'll gather generic data on human performance capabilities and limitations in space and secondly, we'll perform some tasks similiar to those required for the HST mission later this year," said Ron Farris, Chief of the Extravehicular Section at the Johnson Space Center."

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"We'll also demonstrate that the EVA community can plan, train and fly four missions this year and in that sense, it will be a banner year for EVA and will be somewhat representative of the EVA efforts required to build and maintain Space Station Freedom," Farris added.

The spacewalk tests, as performed during STS-54 in January, concentrate on defining the limits of spacewalking abilities, better understanding the differences between true weightlessness and the ground training facilities that simulate weightlessness and gaining more insight into the times required for various tasks to be performed while spacewalking. The tests also expand the spacewalk experience levels among the astronaut corps, Shuttle flight controllers and spacewalk training instructors.

The specific tasks to be performed on STS-57 are still being evaluated by flight planners, however they will concentrate on these goals and be similiar to the STS-54 tasks although they will feature use of the robot arm. The STS-57 spacewalk, as with the STS-54 spacewalk and other such spacewalk tests will be done without any impact on the mission's main objectives and will carry a low priority among the mission's tasks.

STS-57 crew members G. David Low and Jeff Wisoff will perform the EVAs.

With the spacewalk performed in January, those planned for April and July and the spacewalks planned for the STS-61 HST servicing mission in December, a total of four Shuttle flights this year feature spacewalks.

Four Shuttle missions with planned spacewalks in one year ties a NASA record for missions with EVAs set when four spacewalk missions were flown in 1984.

- end -

Kari Fluegel
Johnson Space Center, Houston

March 2, 1993

Release No. 93-014

SCIENTISTS GATHER FOR 24TH LUNAR AND PLANETARY SCIENCE CONFERENCE

Scientists from around the world will meet in Houston to discuss research covering the universe at the 24th Annual Lunar and Planetary Science Conference March 15-19 at the Johnson Space Center.

More than 700 researchers will converge at JSC's Gilruth Center for five days of presentations that will include data from Venus provided by the Magellan spacecraft; new information from the Galileo spacecraft now approaching Jupiter after a high speed pass by the Moon and Earth; and recent findings about the Chicxulub crater off the Yucatan Peninsula which many believe could explain the demise of dinosaurs on Earth.

"Even after 24 years, the conference gets more interesting every year," said Douglas Blanchard, chief of JSC's Solar System Exploration Division. "This year the program is especially strong and covers an interesting variety of planetary topics. We expect that our colleagues will once again find the conference a rich source of new data and ideas."

The public is invited to a special discussion about planetary science March 15 at 8 p.m. in Olin E. Teague Auditorium, Bldg. 2 at JSC. James Arnold of the University of California at San Diego will present "Cosmic Rays Probe Planetary Objects" and Maria Zuber of Johns Hopkins University will discuss "Gravity and Topography Fields of the Terrestrial Planets."

Other conference presentations are:

March 15, 8:30 a.m. -- Basaltic Achondrites; A Geology of Venus--A Tribute of Valery Barsukov; Solar System Origins; and Impact Cratering and Shock Metamorphism.

1:30 p.m. -- Solar, Cosmic Ray and Dynamical Studies; Venus Volcanism; and Manson: The Hole and Shocking Story. Barsukov, who died in July 1992, was vice president of the International Union of Geological Sciences and a frequent keynote speaker on Soviet and Russian planetary exploration. The session of Solar, Cosmic Ray and Dynamical Studies will be dedicated to James R. Arnold, a pioneer in the study of cosmic-ray-produced radionuclides in extraterrestrial materials, who will be celebrating his 70th birthday.

- more -

March 16, 8:30 a.m. -- Primitive Achondrites; Venus Resurfacing and Tectonics; Chicxulub, KT Boundary and Other Impact Ejecta; and Remote Sensing/Space Weathering.

1:30 p.m. -- Meteorites and Volatiles; Venus Gravity from Magellan and Mars Geophysics; Large Impact Events--Theory and Observations and Galileo Earth/Moon Results; and Martian Geomorphology. The session on Meteorites and Volatiles will honor the service of Don Bogard as Planetary Materials and Geochemistry Discipline scientist.

March 17, 8:30 a.m. -- Interplanetary Dust--Laboratory Studies and Results from Spacecraft; Martian Surface Mineralogy and Spectroscopy; and Moon Rocks--From the Highlands to the Maria to Antarctica.

1:30 p.m. -- Ordinary and Enstatite Chondrites; Mars--Tectonism and Volcanism; and Lunar Volcanic Glasses and Regolith.

5:30 p.m. -- COMPLEX Plenary: Integrated Strategy for Planetary and Lunar Exploration from 1995 to 2010.

March 18, 8:30 a.m.--Carbonaceous Chondrites and Chondrules; Mars--Surface and Atmospheric Processes; Lunar Geology; and Asteroid and Planetary Core Formation and Metal-Rich Meteorites.

1:30 p.m. -- Stars, Stardust and Isotope Anomalies; Outer Solar System; and Future Lunar Exploration.

March 19, 8:30 a.m. -- Calcium-Aluminum-rich Inclusions (CAIs) and Heat Sources for Chondrule/CAI Melting; Comets and Asteroids; and Educating Young People in Earth and Planetary Sciences.

In addition to the daily sessions, scientists will participate in the two Poster Sessions set for 7-9 p.m. Tuesday and Thursday at the Lunar and Planetary Institute.

The conference is co-sponsored by the Lunar and Planetary Institute and JSC. All sessions are at JSC's Gilruth Center except when otherwise noted.

- end -

NASA News

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For Release:

Barbara Schwartz
RELEASE No. 93-015

March 5, 1993
11 a.m. CST

STS-62 AND STS-59 SPACE SHUTTLE CREW ASSIGNMENTS ANNOUNCED

NASA today named the crews of STS-62 and STS-59, two Space Shuttle missions scheduled for launch in early 1994.

USAF Colonel John H. Casper will command the STS-62 mission with the second U.S. Microgravity Payload and the second Office of Space and Terrestrial Applications payload, called OAST-2, aboard Columbia. Other crew members are USMC Major Andrew M. Allen as Pilot and mission specialists USN Commander Pierre J. Thuot, USA Lt. Colonel Charles D. "Sam" Gemar and Marsha S. Ivins.

Experiments on STS-62, a 13-day extended duration orbiter mission, include growing crystals of semiconductor materials; investigating the properties of xenon during phase transitions, investigating the fundamental behavior of materials as they solidify into structures known as dendrites and monitoring equipment that will measure and record disturbances in the microgravity environment of the USMP carrier. These experiments allow the scientific and commercial communities to test space-based processes for beneficial applications here on Earth.

USAF Colonel Sidney M. Gutierrez will command the STS-59 Space Radar Laboratory mission aboard Atlantis. Other crew members are USAF Colonel Kevin P. Chilton as Pilot and mission specialists Jay Apt, Ph.D., and Michael R. "Rich" Clifford, USA Lt. Colonel. Previously announced crew members are Linda M. Godwin, Ph.D., named Payload Commander in August 1991 and Thomas D. Jones, Ph.D., named mission specialist in February 1992.

The Space Radar Laboratory, STS-59, will take radar images of the Earth's surface for Earth system sciences studies including geology, geography, hydrology, oceanography, agronomy and botany; gather data for future radar system design including the Earth Observing System, and take measurements of the global distribution of carbon dioxide in the troposphere.

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Casper, 49, commanded STS-54 in January 1993, a mission to deploy a Tracking and Data Relay Satellite. He was Pilot on STS-36 in February 1990, a DOD flight. Casper was born in Greenville, S.C., but considers Gainesville, Ga., his hometown. He received a bachelor of science degree in engineering science from the U.S. Air Force Academy in 1966 and a master of science degree in astronautics from Purdue University in 1967.

Allen, 37, was Pilot on STS-46, an 8-day mission to deploy the European Retrievable Carrier (EURECA) and to demonstrate the Tethered Satellite System (TSS) launched in July 1992. Allen was born in Philadelphia, Penn., and received a bachelor of science degree in mechanical engineering from Villanova University in 1977.

Thuot, 37, was mission specialist on STS-36, a DOD mission launched in February 1990. He also was mission specialist and one of the spacewalking crew members on Endeavour's maiden voyage to retrieve, repair and reboost the Intelsat communications satellite. Thuot was born in Groton, Conn., but considers Fairfax, Va., and New Bedford, Mass., his hometowns. He received a bachelor of science degree in physics from the U.S. Naval Academy in 1977 and a master of science degree in systems management from the University of Southern California in 1985.

Gemar, 37, was a mission specialist on STS-38, a DOD mission in November 1990, and STS-48 in September 1991 to deploy the Upper Atmosphere Research Satellite which studied the winds, chemistry and energy particles in Earth's upper atmosphere. emar was born in Yankton, S.D., but considers Scotland, S.D., his hometown. He graduated with a bachelor of science degree in engineering from the U.S. Military Academy in 1979.

Ivins, 41, was mission specialist on STS-32 in January 1990, an 11-day flight during which the crew deployed a communications satellite and retrieved the Long Duration Exposure Facility, and STS-46, the EURECA/TSS mission. Ivins was born in Baltimore, Md., and received a bachelor of science degree in aerospace engineering from the University of Colorado in 1973.

Gutierrez, 41, was Pilot on STS-40 Spacelab Life Sciences-1 in June 1991. Born in Albuquerque, N.M., Gutierrez received a bachelor of science degree in aeronautical engineering from the U.S. Air Force Academy in 1973 and a master of arts degree in management from Webster College in 1977.

Chilton, 38, was Pilot on STS-49, the Space Shuttle Endeavour's maiden flight in May 1992. He was born in Los Angeles, Calif. Chilton graduated with a bachelor of science degree in engineering sciences from the USAF Academy in 1976 and received a master of science degree in mechanical engineering from Columbia University on a Guggenheim Fellowship in 1977.

Apt, 43, was mission specialist and a spacewalking crew member on STS-37 in April 1991, a mission to deploy the Gamma Ray Observatory and to test concepts and gather engineering data on the forces a crew member can exert on bolts and equipment in preparation for assembling Space Station Freedom. Apt was the flight engineer on STS-47. He was born in Springfield, Mass., but considers Pittsburgh, Penn., his hometown. Apt graduated magna cum laude with a bachelor of arts degree in physics from Harvard College in 1971 and received a doctorate in physics from the Massachusetts Institute of Technology in 1976.

Clifford, 40, flew as a mission specialist on STS-53 in December 1992, a DOD flight, during which Clifford operated a fluid transfer experiment and a laser detector to acquire transmissions from low-power Earth-based lasers. He was born in San Bernadino, Calif., but considers Ogden, Utah, his hometown. Clifford received a bachelor of science degree from the U.S. Military Academy in 1974 and a master of science degree in aerospace engineering from the Georgia Institute of Technology in 1982.

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For Release:

Barbara Schwartz
RELEASE No. 93-016

March 5, 1993

ASTRONAUT JEMISON TO LEAVE NASA

Mae C. Jemison, M.D., announced that she will leave NASA March 8 to pursue interests in "teaching, mentoring, health care issues and increasing participation in science and technology of those who have traditionally been left out."

"I leave with the honor of having been the first woman of color in space, and with an appreciation of NASA--the organization that gave me the opportunity to make one of my dreams possible. The experiences of the NASA astronaut program have opened many doors, and provided a way to put my hard work and training to use for the good of others," said Jemison.

Jemison, 36, was selected for the astronaut program in June 1987. She was a science mission specialist on STS-47, Spacelab-J, in September 1992, a cooperative mission with the Japanese to study life sciences and materials processing. Jemison was a co-investigator on the bone cell research experiment flown on that mission.

Jemison earned a bachelor of science degree in chemical engineering from Stanford and a doctorate degree in medicine from Cornell. Her work experience included medical research, a stint as Area Peace Corps Medical Officer for Sierra Leone and Liberia in West Africa, and a physician for a nation-wide health care organization.

"Mae is an outstanding role model. We are sorry to see her go. I am certain that in our future recruiting efforts we will be able to welcome to the astronaut corps talented young scientists and engineers who have been inspired by Mae's accomplishments. We wish her continued success in whatever she pursues," director of Flight Crew Operations David C. Leestma said.

- end -

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For Release:

Barbara Schwartz
RELEASE NO. 93-017

March 9, 1993

BACKUP CREW MEMBER FOR STS-61, HST MAINTENANCE MISSION

Astronaut Gregory J. Harbaugh is assigned as backup extravehicular activity (EVA, or spacewalking) crew member for STS-61, the Hubble Space Telescope (HST) maintenance mission.

In making the announcement, David C. Leestma, director of Flight Crew Operations, noted "this assignment recognizes the importance of the EVA operations to the success of the mission and provides for some insurance in the event of the unavailability late in the training cycle of any of the four prime EVA crew members. Although we don't expect Greg to get a chance to fly, he will be prepared to substitute if necessary."

Harbaugh, a two-flight veteran, performed a spacewalk in January 1993 as part of the STS-54 mission. Spacewalks have been added to several Space Shuttle missions this year to develop a broader experience base within the Space Shuttle Program and to develop skills and techniques for future space projects, including Space Station and the Hubble maintenance mission.

Harbaugh has been involved in the HST EVA development activities which have occurred over the past several years both at the Johnson Space Center in Houston, Texas, and the Marshall Space Flight Center in Huntsville, Alabama. He will participate in HST training at both the JSC Weightless Environment Training Facility and at the MSFC Neutral Buoyancy Simulator.

Although backup crew members are not normally assigned for Space Shuttle missions, the complexity and importance of the HST maintenance mission have made it prudent in this case.

-end-

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For Release:

Charles Redmond
Headquarters, Washington, D.C.
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March 15, 1993

Linda Ellis
Lewis Research Center, Cleveland
(Phone: 216/433-2899)

RELEASE: 93-45

CATARACT SUFFERERS COULD BENEFIT FROM SPACE TECHNOLOGY

Thousands of potential cataract sufferers may benefit from technology development now underway by researchers at NASA's Lewis Research Center, Cleveland, Ohio. A recently developed, Lewis diagnostic tool may lead to treatment of cataracts while they are in the early formative stages.

According to Dr. Rafat Ansari, project scientist at the Lewis center, "Once a series of voluntary patient studies is completed using this prototype tool, pharmaceutical companies then may have the opportunity to develop the necessary drugs to neutralize a developing cataract."

The tool is a small, fiber optic probe that can detect protein crystals suspended in the fluid inside the eye's lens. These crystals are suspected of forming into a cloudy mass over time, thus causing cataracts.

"Until now," according to Ansari, "physicians have not had the technology to tell what is really happening inside the lens." Along with Professor Harbans Dwadwal of the State University of New York at Stoneybrook, Ansari has developed an instrument that uses laser light to detect cataracts in the very early formative stages.

An optical fiber transmits a low-power laser beam which is scattered inside the eye with the reflections picked up by a return fiber optical path. The reflected light returned through the optical path is sampled by a light detector inside the small device. The laser light is very weak so there is no risk to eye damage from the laser.

- more -

The electrical signal from the detector is fed to a laptop computer where it is analyzed and where it also could be stored permanently. A change in protein particle size might indicate the onset of a cataract.

Ansari points out that fiber optic probes also can measure the sizes of very small particles that are suspended in solutions. This capability may have use in industrial applications as well as in the field of ophthalmology.

Originally developed for an experiment in materials processing aboard the Space Shuttle, the diagnostic tool is small enough to fit in a shirt pocket.

Ansari is a research professor at Cleveland's Case Western Reserve University who works as a project scientist for the Lewis Research Center under a Case Western Reserve-NASA cooperative research program. He currently is assigned to Lewis' Materials Division.

- end -

EDITORS NOTE: Line drawings to illustrate this release are available to news media representatives by calling 202/358-1741. B&W: 93-H-85 and 93-H-86

NASA News
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For Release:

Drucella Andersen
Headquarters, Washington, D.C.
(Phone: 202/453-8613)

March 16, 1993

Michael Mewhinney
Ames Research Center, Mountain View, Calif.
(Phone: 415/604-9000)

RELEASE: 93-46

NASA, LEARJET JOIN TO CREATE NEW BUSINESS JET TECHNOLOGIES

NASA and Learjet Inc., Wichita, Kan., will work together on new technologies and design methods for the development and test of a new high performance business jet.

Under a recently-signed agreement, NASA and Learjet engineers will study aircraft size and aerodynamics to create a sleek, economical plane using state-of-the-art supercomputers and wind tunnels at NASA's Ames Research Center, Mountain View, Calif.

"We are being strongly encouraged to develop research and technology programs in cooperation with the aerospace industry that will contribute to the advancement of commercial aviation. This project is a good example of that effort," said Ames project manager John Gallman. "The computer tools especially will let us take a much more creative approach to aircraft design."

The first year of the joint research program will cost about $2 million for development and testing of a wind tunnel model. NASA will contribute wind tunnel time totaling 480 hours. Learjet will build the model and will cover the costs for developing and flight testing a prototype aircraft if the test results are commercially viable. Tunnel tests are scheduled to begin in January 1994.

Both Learjet and NASA will benefit from technology transfer during this cooperative research project. "This is an opportunity to work with an American company from one end to the other of that process with feedback all the way," said Robert Kennelly, leader of Ames' Transonic Wing Design Group.

-more-

"We bring our facilities, people and expertise to the table," Kennelly added. "Learjet brings the wind tunnel model, the flight test vehicle and their expertise. They learn from us while we're learning from them."

NASA and Learjet will share test data, computer programs and design methods during the cooperative effort. Any new design methods that result will be offered to all U.S. aerospace companies.

Team members plan to include modern airfoils in their designs to reduce "drag" caused by weak shock waves that form on a wing's upper surface as an aircraft approaches the speed of sound. Airfoils are curved or flat parts of a wing that help control an aircraft and generate lift by reacting with the air as it passes the wing.

Engineers also hope to reduce the aircraft's skin friction drag by using a "laminar flow" wing design. The thin sheet of air brushing the aircraft's surface is called a boundary layer. A laminar (smooth) boundary layer reduces the friction caused when air rubs the wing surface.

The NASA-Learjet project also will try to incorporate structures that will produce a minimum weight airframe design. The combination of wings with low drag and lightweight structures should produce an economical, fuel efficient aircraft.

The project is part of NASA's basic research program in subsonic aircraft technology. The program's goal is to develop and prove better design methods for swept-wing transport aircraft such as Learjet's proposed new business jet.

-end-

NASA News

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For Release:

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Headquarters, Washington, D.C.
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March 16, 1993

Myron Webb
Stennis Space Center, Miss.
(Phone: 601/688-3341)

RELEASE: 93-47

NASA AND CENTRAL AMERICA WILL EXPAND RAIN FOREST STUDIES

NASA and the seven Central America nations have begun a program to study, preserve and protect the region's rain forest by expanding the use of satellite data by Central American scientists.

Under an agreement with the Central American Commission for Environment and Development, NASA will train and provide equipment to scientists from Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama.

Using data from the Advanced Very High-Resolution Radiometers flying aboard several U.S. weather satellites, the scientists will be able to estimate the amount and type vegetation cover and forest cover in the region and to conduct coastal studies.

Tropical rain forests have become an international concern because of their important but poorly understood role in the global environment. The satellite data will allow scientists to study land cover and estimate vegetation indexes. Using this data, they will be able to better understand the state of the ecosystem and estimate the area's biological productivity.

The rain forests also are home to a larger proportion of the Earth's plant and animal species than any other ecological system. Protecting this wide range of life, called biodiversity, has become another environmental concern. Many tropical plants and animals produce chemicals that are useful in medicine and other industries. The new program will enable scientists to map the extent and structure of some of these species' habitat.

- more -

The commission became interested in teaming up with NASA because of the work of Dr. Tom Sever of NASA's Stennis Space Center, Miss., and Dan Lee of Sverdup, a NASA contractor. Sever has pioneered the use of NASA remote-sensing technology to assist his research in archaeology. Realizing the capabilities of this technology, the commission entered into an agreement with NASA.

NASA will provide training, computer equipment, software and remote-sensing imagery to the commission. Four commission members spent two weeks in January at Stennis in intensive training. By transferring remote-sensing technology directly to the commission, NASA is providing nations with a vested interest in the rain forest with the means to monitor it.

"Stennis Space Center has amassed a considerable inventory of remote-sensing images of the tropical forest region in Central America," said Sever. "Not only are the images stored at Stennis, but the technology also is here to process the data.

"So what do we do with this information? With the help of other experts in forestry and soils, we could process the data and provide the commission the finished product. But we're taking that a step further and giving the commission the tools to keep this alive."

The remote-sensing data will be used to complement research on the ground and for computer analysis. Guatemala recently declared a 14,000-square-mile expanse of tropical forest and savannah in the country's northeast to be a reserve. Techniques developed in Sever's study will be part of the monitoring policy and management of the resources of the reserve.

"You can do many things with remote sensing technology that just can't be done in the field or would take a long, long time," said Sever. "The technology has given us a way to monitor the region as it has never been done before."

In addition to environmental concerns, the rain forest data will play a role in protecting the cultural sites of the ancient Mayan civilization. As forests are cut down, archaeological sites are exposed to looters. The commission was formed to preserve the archaeological and environmental importance of the region, while allowing the governments to make informed decisions about development, settlement and tourism in the area.

"It's crucial to know what happened to the Mayans and to understand how they successfully managed the delicate tropical forest economy," said Sever. "But then again, the Mayan archaeological sites are the key to the area's tourism. An infrastructure must be created to protect this Central American region and to steer development into areas that would be harmed the least."

- more -

In 1993, NASA will provide between $40,000 and $50,000 through its Earth Science and Applications Division, which also manages the agency's Mission to Planet Earth. The balance between environmental and economic concerns in the Central American rain forest echoes the central mission of Mission to Planet Earth, a comprehensive program to study the global environment that will provide governments with the information needed to make informed environmental policy decisions.

The international agreement with the commission parallels another aspect of Mission to Planet Earth: international cooperation among scientists. When the Earth Observing System Data and Information System becomes operational later in the decade, scientists from all nations taking part in Mission to Planet Earth will have access to data from all Mission to Planet Earth programs.

International scientific cooperation should lead to international cooperation on environmental issues, said Dr. Shelby G. Tilford, Acting Associate Administrator of NASA's Mission To Planet Earth Office.

- end -

NASA News

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For Release:

Jeff Vincent
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April 1, 1993

RELEASE: 93-59

SPACE STATION REDESIGN ADVISORY MEMBERS NAMED

Along with Dr. Charles M. Vest, recently named by Vice President Albert Gore to head the Advisory Committee on the Redesign of the Space Station, NASA has announced the names of representatives from government and industry and academic experts from across the country to participate in an independent review of the redesign options being developed by NASA.

"I am extremely honored to have been selected to lead this important review panel. America's future in science and technology and as a world leader in space demands our utmost attention and care," said Vest. "We have assembled a diverse panel of experts that, I believe, will bring the appropriate measures of insight, integrity and objectivity to this critical task."

The Advisory Committee is charged with independently assessing various redesign options of the space station presented by NASA's redesign team, and proposing recommendations to improve efficiency and effectiveness of the space station program. Space station international partners also are being asked to participate and will be named at a later date. The Advisory Committee will submit its recommendations in June.

- more -

Advisory committee members named today include:

Dr. Bobby Alford
Exec. VP & Dean of Medicine
Baylor College of Medicine

Mr. Jay Charbrow
President
JMR Associates

Dr. Paul Chu
Director, Texas Center for Superconductivity
University of Houston

Dr. Ed Crawley
Prof. of Aeronautics & Astronautics
Massachusetts Institute of Tech.

Dr. John Fabian
President & CEO
ANSER

Maj. Gen. James Fain
Dep. COS for Requirements
HQ, USAF Materials Command

Dr. Edward Fort
Chancellor
North Carolina A&T State Univ.

Dr. Mary Good
Senior Vice President of Tech.
Allied Signal, Inc.

Mr. Frederick Hauck
President
International Technical Underwriters

Dr. Lou Lanzerotti
Chairman, Space Sciences Board
National Research Council

Mr. William Lilly
National Academy of Public Administration

Mr. Duane McRuer
President
Systems Technology, Inc.

Dr. Brad Parkinson
Prof. of Astronautics and Aeronautics
Stanford University

Dr. Robert Seamans
Former Deputy Administrator
NASA

Dr. Lee Silver
W. M. Keck Foundation Professor for Resource Geology
California Institute of Technology

Dr. Albert "Bud" Wheelon
Retired CEO
Hughes Aircraft

NASA News

National Aeronautics and
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Washington, D.C. 20546
AC 202 453-8400

ISY

Debra J. Rahn
Headquarters, Washington, D.C.
(Phone: 202/358-1639)

For Release
April 2, 1993

RELEASE: 93-61

PRIME AND BACKUP COSMONAUTS NAMED FOR SHUTTLE STS-60 MISSION

NASA and the Russian Space Agency (RSA) today announced the selection of Sergei K. Krikalev as the prime mission specialist and Vladimir G. Titov as the backup mission specialist on the STS-60 mission currently scheduled for launch in November 1993.

The two cosmonauts have been undergoing mission specialist training for at NASA's Johnson Space Center, Houston, since early November 1992.

Charles F. Bolden, Jr. (Col., USMC) is the STS-60 Commander. The other U.S. crewmembers are Pilot Kenneth S. Reightler, Jr. (Capt., USN), and mission specialists Franklin R. Chang-Diaz, Ph.D., N. Jan Davis, Ph.D., and Ronald M. Sega, Ph.D.

Mission objectives include a number of microgravity experiments in Spacehab-2, the Wake Shield Facility experiment to test the creation of an ultra-vacuum to produce extremely pure thin film crystals for industrial uses ranging from microelectronics to lasers and superconductivity, a Capillary Pumped Loop Experiment to study a method of heat dissipation in space and a number of small experiments known as Getaway Specialists flown in the orbiter's payload bay. Russian Space Agency-sponsored life science activities also will be included in the mission.

The flight of a cosmonaut on the STS-60 mission is one element of the Implementing Agreement on NASA/RSA Cooperation in Human Space Flight, signed by NASA and RSA on October 5, 1992. Other elements include the launch of a NASA astronaut to the Russian space station Mir in March 1995 and the U.S. Space Shuttle/Mir docking in June 1995.

- end -

SERGEI KONSTANTINOVICH KRIKALEV

Sergei Konstantinovich Krikalev was born on Aug. 27, 1958, in Leningrad. He completed his studies at the Institute of Mechanics in Leningrad in 1981, and then worked in a design bureau where he participated in the creation of new space technology devices. He is involved in sport aviation and holds a Master of Sport in sport aviation.

Krikalev began cosmonaut training in November 1985 and made his first spaceflight as flight engineer onboard Soyuz TM-7, launched on Nov. 26, 1988. Krikalev returned to Earth after having spent 151 days, 11 hours and 8 minutes in space. His second flight aboard Mir was May 18, 1991, to March 25, 1992 (312 days).

Upon his return, Krikalev was awarded the title of Hero of the Soviet Union and also received the Order of Lenin. In addition, the French awarded him the title of L'Officer de la Legion d'Honneur.

Krikalev is married and has a daughter born in 1990.

- end -

COL. VLADIMIR GEORGIEVICH TITOV

Col. Vladimir Georgievich Titov, Soviet Air Force, was born Jan. 1, 1947, in the town of Sretensk, Chitinck region. Titov graduated from the Higher Air Force College in Chernigov, Ukraine, in 1970, where he served as a pilot-instructor until 1974. Titov has flown 10 different types of aircraft, has logged over 1300 hours flying time and holds the qualifications of Military Pilot, 1st Class and Test-Pilot, 3rd Class.

Titov was selected to join the cosmonaut team in 1976 and in September 1981, served as backup crew member for Soyuz T-5 launched on May 18, 1982.

Titov made his first spaceflight as Commander of Soyuz T-8, launched on April 20, 1983. Titov was supposed to dock with Salyut 7, but was unable to because the Soyuz rendezvous radar antenna failed to deploy properly. After several attempts, Titov aborted the rendezvous to avoid a crash and returned to Earth after a flight lasting just over 2 days.

Titov next served as backup for the Soyuz T-9 mission launched on June 27, 1983.

Titov was onboard Soyuz T-10 on Sept. 27, 1983, which caught fire 1 minute before launch when a propellant line valve failed to close at T-90 seconds. The fire quickly engulfed the rocket, but controllers were able to pull the Soyuz descent module clear using the launch escape system. The crew landed safely some 2.5 miles (4 km) from the launch vehicle.

In 1987, he graduated from the Yuri Gagarin Air Force Academy while working at the Yuri Gagarin Cosmonaut Training Center.

Titov was Commander of the Soyuz TM-4 launched on Dec. 21, 1987. Titov and Musa Manarov set a new record for long duration in space of 365 days, 22 hours and 89 minutes. Upon his return to Earth, Titov was awarded the title of Hero of the Soviet Union and received his second Order of Lenin. In addition, the French awarded him the title of Commandeur de la Legion d'Honneur. In 1990, he and Manarov were awarded the U.S. Harmon Prize, the first Soviet citizens to win the award, in recognition of their world endurance record.

Titov is married and has a daughter born in 1975 and a son born in 1985.

- end -

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AC 713 483-5111

Barbara Schwartz
RELEASE NO. 93-032

For Release:
May 4, 1993

ASTRONAUT SEDDON INJURED DURING TRAINING

Dr. M. Rhea Seddon, payload commander on Spacelab Life Sciences-2 mission scheduled for launch this fall, broke four metatarsal bones in her left foot during a routine training exercise at Johnson Space Center's orbiter training facility May 3.

The STS-58 crew was practicing emergency egress from the orbiter, using an inflatable slide similar to those used by the airline industry for landing emergencies to evacuate passengers. As Dr. Seddon was sliding down the slide, her left foot became pinned under her, causing four minor bones to break.

"There will be no impact to the mission because of Dr. Seddon's injury. She may miss a small amount of training in the next two weeks, but she is an experienced astronaut and most of these early training activities are refresher courses. She will return to full-time training in two to four weeks," Flight Crew Operations Director David C. Leestma said.

A safety review team lead by Gary Jackson of JSC's Safety Division has been established as a precautionary measure to investigate the incident.

-end-

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ISY

For Release

Ed Campion
Headquarters, Washington, D.C.
(Phone: 202/358-1778)

May 6, 1993

Barbara Schwartz
Johnson Space Center, Houston
(Phone: 713/483-5111)

EDITORS NOTE: N93-24

SPACELAB D-2 POSTFLIGHT PRESS CONFERENCE TO BE HELD MAY 18

The STS-55 Spacelab D-2 postflight crew press conference will be held Tuesday, May 18, at 2:30 p.m. EDT at the Johnson Space Center, Houston, in building 2, room 135.

The crew members will narrate film highlights of their German research mission to study life sciences and materials processing in microgravity. The briefing will be carried on NASA Select television with two-way audio for questions from NASA Headquarters and other centers. NASA Select programming is carried on SATCOM F2R, transponder 13, located at 72 degrees west longitude.

News media with mission badges will not need further accreditation. Crew members will not be available for interviews until after the postflight press conference.

- end-

NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
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AC 713 483-5111

For Release:

May 6, 1993

Ed Campion
Headquarters, Washington, D.C.
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Jeffrey Carr
Johnson Space Center, Houston
(Phone: 713/483-5111)

RELEASE: 93-033

COLUMBIA'S RETURN MARKS SIGNIFICANT SPACE SHUTTLE MILESTONES

With the return this morning of the Space Shuttle Columbia from its 14th successful mission, just over 1 full year of flight time in space has been accumulated by the Space Shuttle fleet. In that time, a number of significant statistics have emerged.

The 1-year mark was surpassed at 10:01:42 a.m. EDT on May 5. With the landing at the Dryden Flight Research Facility, Edwards, Calif., at 9:30 a.m. CDT today, the total accumulated Shuttle flight time stands at 365 days, 23 hours and 28 minutes.

The Space Shuttle flight era began with STS-1 and the launch of Columbia on April 12, 1981 with mission Commander John Young and Pilot Robert Crippen. Since then, Space Shuttles have carried to orbit 670 major, fixed and deployable payloads and experiments totalling 822 tons and returned 636 weighing 425 tons.

Representing only 5 percent of all U.S. space launches, Space Shuttles have carried 56 percent of all U.S. payloads to orbit and 44 percent of all U.S. cargo weight to orbit.

Fifty-one satellites have been deployed, 5 of which were recovered and returned on the same flight. Three of the 51 satellites were interplanetary probes to Venus (Magellan), Jupiter (Galileo) and the Sun (Ulysses). Three were orbiting observatories - the Hubble Space Telescope, the Gamma Ray Observatory and the Upper Atmosphere Research Satellite.

- more -

Others were communications satellites and experiment platforms such as the Long Duration Exposure Facility which orbited Earth for nearly 6 years before being retrieved and returned to Earth. Two communications satellites, the PALAPA-B2 and WESTAR-VI, were later retrieved, returned to Earth for refurbishment and relaunched.

Scientific studies aboard the Space Shuttle and in Spacelab modules carried aboard Shuttles have investigated life sciences, materials sciences, combustion science, solar science and physics, space plasma physics, atmospheric studies, biotechnology, Earth observations, astronomy and the study of the behavior of metals, semiconductors, bio-processing and fluids in the microgravity enviroment of space flight. Time accumulated in Spacelab science operations, alone, stands at 96 days and 13 hours.

Including 16 non-U.S. flyers representing 10 different countries, 161 individuals have flown in space at least once on the Shuttle. Astronauts have conducted 16 rendezvous operations, the retrieval and repair of 3 satellites and 20 spacewalks totalling over 223 hours. Six of them were untethered free-flights using the manned maneuvering unit.

- end -

"365 Days in Space"
A Statistical Study of Space Shuttle Productivity

As of STS-55 landing (5/06/93):

SIGNIFICANT MILESTONES

Missions Launched: 55 (approx. 5% of total U.S. launches)
Mission Success Rate: **98.181% (54 of 55)**
Miles Traveled: **Over 130 million statute miles**
Orbits Flown: **Over 6,200**

HUMAN ACTIVITY ON SHUTTLE

Shuttle Man-Years in Orbit: **5.7 (65% of total U.S. man-years)**
(25% of total man-years)

Individuals Flown in Space on Shuttle: **161 (55% of total humans in space)**

* 145 U.S. flyers (80% of total Americans in space)
* 16 non-U.S. flyers (representing 10 countries)
* 89 have made multiple flights

SHUTTLE PAYLOADS LAUNCHED & RETURNED

Payloads to Orbit: **670 (approx 56% of total U.S. payloads to orbit)**
(approx 16% of total announced payloads to orbit)
(Note: Includes major attached payloads and experiments, deployables)

Payloads Returned to Earth: **636**

Satellites Deployed: **51**
Satellites Retrieved & Repaired: **3** (Solar Max, LEASAT-3, INTELSAT-V)
Satellites Retrieved and Returned to Earth: **9** (2 refurbished, relaunched)

SHUTTLE WEIGHT-LIFTING RECORD

Cargo Weight to Orbit: **1.64 million lbs (822 tons) (44% total U.S.)**
Cargo Weight Deployed: **756,000 lbs (378 tons)**
Total Weight (including Orbiters) to Orbit: **approx. 13.5 million lbs**

MISCELLANEOUS

Shuttle Rendezvous Operations: **16**

Shuttle Spacewalks (EVAs): **20 (16 planned; 4 unplanned; 6 free-flyers)**
Total Shuttle EVA Time: **223 hours**
Space-walking Shuttle Astronauts: 22 **(46% of total U.S. spacewalkers)**

Women Flown in Space on Shuttle: **19**
American Minority Astronauts Flown: **11**
Members of Congress Flown: **2**

Flights/Discovery: **16**
Flights/Columbia: **14**
Flights/Atlantis: **12**
Flights/Challenger: **10**
Flights/Endeavour: **3**

Spacelab Missions: **12** (including 96 days, 13 hrs. science operations)

Note: These statistics are based on announced information and, as such, are somewhat conservative. Some information regarding Department of Defense missions was unavailable for calculations.

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NASA News

National Aeronautics and
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For Release:

Charles Redmond
Headquarters, Washington, D.C.
(Phone: 202/358-1757)

May 14, 1993

RELEASE: 93-85

SOLICITATION ISSUED FOR TECHNOLOGY REINVESTMENT PROPOSALS

The solicitation of proposals for the Technology Reinvestment Project was published today in the Commerce Business Daily and will be published early next week in the Federal Register.

The Technology Reinvestment Project is a $471 million federal interagency effort to develop and deploy dual-use technologies and at the same time give a competitive advantage to American companies. The solicitation seeks proposals in a wide range of technological areas from companies and industry-university partnerships. Proposals are due by July 23, 1993.

The overall goal of the project, which is part of the White House $1.7 billion Defense Reinvestment and Conversion Initiative, is to commercialize technologies developed in federal research and development laboratories.

The project is structured to create new, high technology products, processes, and manufacturing skills that will lead to the creation of high quality jobs in the commercial sector that both enhance American competitiveness and make advanced military systems more affordable.

Funding for the project comes from Defense Department funds. The project also has aspects which will work to develop and enhance engineering curricula at major universities and technical schools to meet the anticipated competitive challenges of this decade.

- more -

NASA is participating in this project with the Department of Defense Advanced Research Projects Agency, the Commerce Department National Institute of Standards and Technology, the Department of Energy and the National Science Foundation. Representatives from each of the participating agencies constitute the review and selection panels for the proposals.

Copies of the solicitation can be obtained by calling the Technology einvestment Project's 1-800-DUAL-USE (382-5873) number. Copies of the solicitation are available to the media at the Department of Defense Directorate for Defense Information, Room 2E765, Pentagon, (703/695-0192) and at the NASA Headquarters newsroom, 300 E Street, SW, Washington, D.C. (202/358-1600).

- end -

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For Release:

Paula Cleggett-Haleim
Headquarters, Washington, D.C.
(Phone: 202/358-1547)

May 18, 1993

Franklin O'Donnell
Jet Propulsion Laboratory, Pasadena, Calif.
(Phone: 818/354-5011)

RELEASE: 93-89

MAGELLAN TO TEST AEROBRAKING MANEUVER IN VENUS ATMOSPHERE

NASA's Magellan spacecraft will dip into the atmosphere of Venus beginning May 25 in a first-of-its-kind "aerobraking" maneuver, lowering the spacecraft's orbit to start a new experiment.

The aerobraking technique will use the drag created by Venus' atmosphere to slow the spacecraft and circularize Magellan's orbit. Currently Magellan is looping around Venus in a highly elliptical orbit.

"This aerobraking technique has never been used before on a NASA planetary mission," said Douglas Griffith, Magellan project manager at NASA's Jet Propulsion Laboratory, Pasadena, Calif.

"Magellan has been highly successful in completing all of its primary mission goals," said Alphonso V. Diaz, Deputy Associate Administrator for NASA's Office of Space Science. "The new orbit will enhance the scientific return from what is already one of NASA's most successful space science missions."

According to Griffith, aerobraking is the only way to make such a large change in Magellan's orbit because the spacecraft does not have enough thruster fuel onboard for the change. "Although aerobraking creates some risk of losing the spacecraft, the scientific benefits make the risk worthwhile," he said.

The benefit of changing the orbit is to make possible better measurements of Venus's gravity field, particularly at latitudes near the planet's poles, said Dr. R. Stephen Saunders of JPL, the Magellan Project Scientist.

- more -

For the past 8 months, Magellan has been collecting data on Venus' gravity. However, measurements from the current elliptical orbit are blurred at high latitudes by the height of the spacecraft above the surface -- about 1,300 miles (2,100 kilometers) near the north pole and 1,700 miles (2,800 kilometers) near the south pole.

Scientists also hope to study Venus's atmosphere using data collected during the aerobraking experiment itself. And another objective is to gain the engineering experience that may allow future missions to use aerobraking to enter planetary orbit or to change orbit without using large thrusters.

Launched in May 1989, Magellan will complete its fourth 243-day orbital cycle at Venus on May 25. During each of the 8-month cycles, Magellan orbits from north to south while the planet turns once underneath the spacecraft.

--During earlier cycles, Magellan used its radar to map Venus's surface with a resolution as fine as 250 feet (75 meters). Data was obtained on the elevation, slope, radar reflectivity and radar emissivity over 98 percent of the planet.

In the upcoming maneuver, flight controllers hope to lower the spacecraft from a low point near 100 miles (170 kilometers) and high point of 5,300 miles (8,500 kilometers). The target orbit is 125 by 375 miles (200 by 600 kilometers). This would alter orbit time from 3-1/4 hours to 90 minutes.

The aerobraking experiment will start at 1:30 p.m. EDT May 25, when the spacecraft makes the first maneuver. By controlling the orbit altitude, the drag and heat generated on the spacecraft will be kept within tolerable limits.

Completing the change will take about 80 days. The short period of drag on each orbit, a few minutes at the start to about 20 minutes near the end, will lower the orbital high point by about 6 miles (10 kilometers) on every orbit.

Measuring Venus's gravity field permits scientists to measure the pattern of heavier and lighter regions under the planet's surface. It is the only technique currently possible to look inside Venus and provides information like that gained using seismometers to probe inside a planet. Similar measurements on Earth helped reveal plate tectonics, Earth's fundamental geologic process.

"Without better measurements from a lower orbit, it would remain very hard to understand Venus's internal geology and why it is so different from Earth," said Saunders.

JPL manages the Magellan mission for NASA's Office of Space Science, Headquarters, Washington, D.C.

-end-

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For Release:

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June 4, 1993

RELEASE: 93-104

STATION REDESIGN TEAM TO SUBMIT FINAL REPORT

The Space Station Redesign Team, comprised of representatives from NASA and the international partners, will submit its final report on three space station options to the White House Advisory Committee on the Redesign of the Space Station on Monday, June 7, at the Stouffer Hotel in Crystal City, Va.

The three options, the results of nearly 3 months of intensive research and analysis, include a modular concept that would use existing flight-proven hardware, a derivative of the current Space Station Freedom design and a space station that could be placed into orbit with a single launch of a Shuttle-derived vehicle.

"The Team has done a tremendous job," said NASA Administrator Daniel Goldin. "They have developed 3 technically viable space stations. Each provides for international cooperation, establishes a fully-capable space research center in orbit that will enable high priority science, technology and engineering research and in every case, do it for significantly less money than the current Space Station Freedom baseline."

"The cost estimates provided by the Redesign Team reflect complete and accurate costs of each option and the current Space Station Freedom design, " Goldin said.

The baseline Freedom cost numbers were subjected to rigorous review by an expert NASA team working apart from the Freedom program. Those results, plus the costs of the three space station options, are being reviewed by an experienced, independent cost analysis team created by the White House advisory committee.

-more-

"The estimates are honest and defensible. They provide a solid basis for decision because they are comprehensive and compare all options on an apples-to-apples basis," Goldin said. "Our books are open and will withstand the closest scrutiny."

President Directs Redesign

An assessment early in 1993 by the incoming Administration determined the increases in the Space Station Freedom budget in the outyears would not fit within the expected NASA budget, which the Administration planned to cut by about 15 percent over the next 5 years in the interest of federal deficit reduction. The White House also wanted to place increased emphasis on other NASA programs such as aeronautics and science.

Rather than cancel the program, President Clinton directed NASA to redesign the space station and produce a configuration that would significantly reduce development, operations and utilization costs, while at the same time honor the United States' commitments to the international partners and provide the essential resources to advance the nation's scientific and technology development capabilities in space.

The Station Redesign Team also was charged with recommending new and streamlined management structures and acquisition strategies and to develop operational concepts that would cut operations costs in half.

Monday's meeting will be the third and final public meeting with the Advisory Committee. Chaired by MIT President Dr. Charles Vest, the 16-member Advisory Committee will provide an independent assessment of the designs, cost, proposed management structure and the operations plan, and forward that assessment to the President on or about June 10.

"The objective of the redesign team was to develop options for a redesigned space station," said Goldin. "The team was not asked to recommend one option over the others but rather to characterize each design's strengths and weaknesses in an unbiased manner."

Directed by Deputy Associate Administrator for Space Flight and former astronaut Bryan OUConnor, the NASA team was led by a core group of about 36 people. The diversified team had at least one representative from each NASA center, several scientists and engineers with backgrounds that ranged from program managers to spacecraft designers.

-more-

Ten representatives from the international partners - the European Space Agency, Japan and Canada - and from Italy formed the remainder of the core team. Consultants from other government agencies and from industry served as advisors to the group. The core team, working in Crystal City, Va., received technical support on each of the options by people from across NASA.

Station Objectives Outlined

Goldin provided specific objectives and constraints, reflecting guidance from the Administration, to the team in an implementation letter of March 9, 1993. In the letter, Goldin stressed that the redesigned space station must:

- Provide a cost effective solution to basic and applied research challenges whose merit is clearly indicated by scientific peer review, significant industrial cost sharing or other widely accepted method;

- Provide the capability for significant long-duration space research in materials and life sciences during this decade;

- Bring both near-term and long-term annual funding requirements within the constraints of the budget;

- Continue to accommodate and encourage international participation; and

- Reduce technical and programmatic risk to acceptable levels.

Other directions to the team from Goldin included constraints or objectives of greatly reducing on-orbit assembly and checkout; planning for a shorter on-orbit lifetime (e.g., 10 years extendible to 15 years); greatly reducing the number of Shuttle launches and extravehicular requirements for deployment; advancing the permanently manned capability date; and reestablishing national leadership in space.

In addition, the team was directed to give consideration to greater use of Shuttle and Spacelab capabilities (which may be modified to allow longer stays in orbit) and the Russian Mir space station.

Budget Guidelines Set

In addition, Dr. John Gibbons, the President's Science Advisor, provided budget guidance for the Advisory Committee to use in their deliberations. For the

5-year period from Fiscal Years 1994 to 1998, NASA was to assume a low option of $5 billion, a mid-range option of $7 billion and a high option of $9 billion.

Activities which were to be paid for within the $5 billion, $7 billion and $9 billion accounts included: space station development, operations, utilization (including building science experiments and other payloads for the station and for Spacelab as well as the ground infrastructure to manage and deliver data to the users), Shuttle integration, facilities, research operations support, termination costs, transition costs and an appropriate level of reserves.

Three Main Options Evolve

Option A is a modular build-up configuration which uses a combination of Space Station Freedom hardware and flight-qualified space systems from other sources, including the potential use of a self-contained DoD spacecraft called "Bus-1" to provide propulsion, guidance, navigation and control. Option A includes a "Bus-1" configuration and a configuration without "Bus-1." Option A has four distinct phases of buildup including: Power Station (1 photovoltaic(PV) array on-orbit for increased power to a docked orbiter/Spacelab); Human Tended Capability (adds U.S. laboratory); International Human Tended (adds an additional PV array and international elements); and Permanent Human Capability (adds third PV array, the U.S. habitat module and two Russian Soyuz ACRVs).

Option B is derived from mature Space Station Freedom designs. It makes maximum use of current systems and hardware to provide an incrementally increasing capability, emphasizing accommodations for users, adherence to international partner commitments, flexibility and growth potential, and recommends some system changes to save money. Like Option A, the Freedom-derived option is built up over 4 stages. From an assembly sequence standpoint, the primary difference between the Option A and B is that the Freedom-derived configuration adds the third PV array before the international partner elements are added.

Option C is a single-launch space station. This configuration features a 92-foot-long, 23-foot-diameter core module launched as part of a Space Shuttle vehicle and uses an existing external tank, solid rocket boosters and Shuttle main engines. The module would provide 26,000 cubic feet of pressurized volume, separated into 7 "decks" connected by a centralized passageway. Seven berthing ports would be located on the circumference of the module to place the international modules and other elements.

-more-

"Each option is capable of accomplishing the mission of the space station," said Goldin. "All of them offer significant scientific and engineering research capabilities, especially in their permanently human presence stages."

Goldin said all the options also would:

- make maximum use of Space Station Freedom systems and components, which have completed a rigorous critical design review, where it is both cost effective and schedule enhancing, thus benefiting from the nationUs investment to date in the Freedom program;

- incorporate changes that would reduce complexity and increase the probability for meeting cost and schedule;

- achieve substantial savings through a streamlined management structure that rovides clear lines of authority, reduces overlap and gives accountability and authority to the lowest level to get the job done; and

- benefit from a new operations approach that would significantly reduce operational costs.

Goldin said Russian hardware alternatives, where it could benefit the redesigned space station program, also were investigated. In all three options, the Soyuz crew return vehicle has been baselined as the assured crew return vehicle. Launch capability and other systems developed and in operation in the Russian space program are described in the report and will be considered for use in the redesigned space station or in future improvements.

-end-

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For Release:
June 14, 1993

Billie Deason
Barbara Schwartz
RELEASE 93-044

MEMORIAL SERVICE SET FOR DONALD K. "DEKE" SLAYTON

Memorial services for Mercury Astronaut Donald K. "Deke" Slayton have been set for 1 p.m. CDT Saturday, June 19, at the Johnson Space Center.

The services will be conducted on the north side of JSC Bldg. 1 and are open to the public.

Slayton, 69, one of the United States' original seven astronauts selected for the Mercury Program, died Sunday from complications of a brain tumor.

The family requests that memorials be sent to The Mercury Seven Foundation at 6225 Vectorspace Blvd., Titusville, Fla., 32780; or to Give Kids the World at 210 S. Bass Rd., Kissimmee, Fla., 34746.

- end -

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For Release:

Kyle Herring
RELEASE: 93-062

August 9, 1993

NOTE TO EDITORS

HST MEDIA WORKSHOP SCHEDULED FOR AUG. 30 - SEPT. 1

A workshop for news media is scheduled for Aug. 30 through Sept. 1 at the Johnson Space Center (JSC), Houston, to familiarize reporters with the training and operations leading up to the first servicing mission of the Hubble Space Telescope, currently scheduled for launch in December.

The workshop will include briefings on mission preparation and round-robin interviews with the seven-member crew. The mission preparation and overview briefings will be carried on NASA Select television. In addition, the workshop will include hands-on demonstrations of tools and training methods to provide as much insight as possible for reporters planning to cover the mission.

The dates for the workshop currently coincide with the second major fully-integrated mission simulation, scheduled to begin Aug. 31 and continue for 36 hours. The exercise will include two six-hour water tank sessions in the Weightless Environment Training Facility (WETF) by the crew members to simulate the spacewalks planned for the mission.

The workshop has moved from the previously scheduled dates of Aug. 16-18 due to the delay in the STS-51 Space Shuttle mission. News media interested in attending the workshop and taking part in the crew interviews should notify the JSC Newsroom at 713/483-5111. An agenda for the 3-day workshop follows.

- more -

HUBBLE SPACE TELESCOPE FIRST SERVICING MISSION (HST SM-01)
Training And Operations Media Workshop

<u>Monday</u> -- <u>August 30, 1993</u>

9 - 10 a.m.	Randy Brinkley/Milt Heflin	Mission Overview
10 - 11 a.m.	Jim Thornton/Sue Rainwater	EVA/HST Tools
11 - Noon	Joe Rothenberg/Ed Weiler	HST Spacecraft/Science
1 - 5 p.m.	STS-61 Crew	Round-Robin Interviews

<u>Tuesday</u> -- <u>August 31</u>

8 a.m.	HST Sim Begins (MET 03/16:30)	EVA-2 (SA changeout)

(Reporters take turns on-console with Commentator listening in on headset)

11:20 a.m.	Weightless Environment Training Facility	EVA-2
1 - 5 p.m.	Richard Fullerton	Precision Air Bearing Floor (PABF) and POGO concept

<u>Wednesday</u> -- <u>September 1</u>

	HST 36-Hour Sim Continues	EVA-2

(Reporters take turns on-console with Commentator listening in on headset)

11:20 a.m.	Weightless Environment Training Facility	EVA-2 (contingency)
9 a.m. - 1 p.m.	Mike Goza	Virtual Reality Demo

**** ALL-DAY INTERVIEW DESK FOR NON-CREW INTERVIEWS ****

- END -

Barbara Schwartz
RELEASE 93-067

August 23, 1993
Noon CDT

CREW MEMBERS SELECTED FOR STS-65

USMC Colonel Robert D. Cabana will command the STS-65 mission scheduled for the summer of 1994 aboard Columbia. Other crew members are pilot USAF Major James D. Halsell, Jr., and mission specialist USAF Major Carl E. Walz. Crew members previously named are payload commander Richard J. Hieb, who was named in September 1992, mission specialists Leroy Chiao, Ph.D., and Donald A. Thomas, Ph.D., and Japanese payload specialist Chiaki Mukai, Ph.D. and M.D., named in October 1992.

The STS-65 mission will fly the International Microgravity Laboratory (IML-2), which has a complement of international experiments focusing on materials and life sciences research in microgravity. The experiments are being developed by 80 principal investigators from more than 13 countries. The payload crew members will perform the experiments during a 13-day mission while the orbiter is flown in a "gravity gradient" stabilized attitude (tail toward Earth) to maintain the best possible laboratory conditions with the least gravitational disturbances in the Spacelab.

Cabana, 44, was pilot on STS-41 in October 1990, a mission to deploy the Ulysses spacecraft for its 4-year journey to study Jupiter, and on STS-53 in December 1992, a Department of Defense mission. He was born in Minneapolis, Minnesota, and received a bachelor of science degree in mathematics from the United States Naval Academy in 1971.

Halsell, 36, was born in Monroe, Louisiana, and received a master of science degree in space operations from the Air Force Institute of Technology in 1985. Halsell was selected for the astronaut corps in January 1990, and this is his first Space Shuttle mission.

Walz, 37, is a mission specialist on STS-51 scheduled for September 1993,
which will deploy the U.S. Advanced Communications Technology Satellite and deploy and retrieve the Shuttle Pallet Satellite, during the 9-day mission. Walz was born in Cleveland, Ohio, and received a master of science degree in solid state physics from John Carroll University, Ohio, in 1979.

-end-

NASA News
National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release:

Dwayne C. Brown
Headquarters, Washington, D.C.
(Phone: 202/358-0547)

January 4, 1994

NOTE TO EDITORS: N94-2

NASA TELEVISION SYSTEM TO BE RECONFIGURED

On Jan. 8, 1994, at 10:00 a. m. EST, NASA's television system, NASA Select, will be reconfigured to transmit on a different satellite transponder. Transmissions will be on Spacenet 2, transponder 5, located at 69 degrees West with horizontal polarization. Frequency will be on 3880.0 Megahertz, audio on 6.8 Megahertz.

This reconfiguration may affect your ability to receive and distribute NASA Select transmissions. NASA Select video and audio over the transponder you are presently viewing (Satcom F-2R, transponder 13) will be discontinued.

NASA Select is an agency-wide TV-audio system offering a wide range of programming, including coverage of Space Shuttle flights and other NASA mission activities. Unless noted, all programming carried on NASA Select may be taped for rebroadcast and other uses.

- end -

NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

Jeff Vincent
Headquarters, Washington, D.C.
(Phone: 202/358-1898)

For Release:
January 6, 1994

RELEASE: 94-3

NASA ADMINISTRATOR ANNOUNCES MANAGEMENT CHANGES

NASA Administrator Daniel S. Goldin announced today a number of management appointments and organization structural changes at NASA Headquarters in Washington, DC and at various NASA field centers.

"These appointments and realignments will enhance and strengthen the agency's programs and institutions," Goldin said. "They will affect NASA science, technology, research facilities and major programs, as well as the agency's Advisory Committee structure. All will benefit.

"The appointments and the emphasis they bring to their respective areas of expertise are in keeping with the President's goal to make government less expensive and more efficient, and to reinvigorate NASA."

NEW CENTER DIRECTORS

Ames Research Center

Dr. Ken K. Munechika has been appointed Director of the Ames Research Center, Mountain View, Calif. He has been serving as the Executive Director of the Office of Space Industry of the State of Hawaii. He previously held a number of key management and technical positions during a distinguished 31-year Air Force career. His last Air Force assignment was as Senior Commander of the Onizuka Air Force Base, Sunnyvale, Calif.

- More -

Dr. Dale Compton, the present director of Ames, plans to retire on Jan. 28. Goldin said that Compton will be working with Munechika to affect a smooth transition. "The Ames Research Center will continue to play a major role in aeronautics becoming, along with the Langley Research Center, a Center of Excellence for Aeronautics," Goldin said. "These centers will provide an essential function supporting the U.S. aeronautics industry in maintaining a competitive edge and an advanced and far-reaching research capability."

Dryden Flight Research Facility

Effective March 1, 1994, the Dryden Flight Research Facility will be established as a separate entity, and will no longer be a part of the Ames Research Center. Kenneth J. Szalai, who currently heads Dryden as a deputy director of Ames, has been appointed as the new director of Dryden, reporting directly to Wesley Harris, Associate Administrator for Aeronautics. Goldin said that Szalai "will develop a timely transition plan to reflect the establishment of Dryden as a separate entity with responsibility for all functions related to its management.

"Operating as a separate facility, Dryden will be able to support the agency's aeronautics and space programs in a streamlined manner, by working directly to serve each of the research and flight centers," Goldin said. He said that Dryden will work with the centers and aerospace community customers to formulate and implement flight research and test programs and streamline program execution. Project reporting lines will directly link the centers and the NASA Headquarters offices that Dryden supports.

"This change reflects the commitment on the part of NASA to reduce layers of management and empower operating organizations to carry out their mission with maximum benefit to the country. It fully supports the fundamental principles to 'reinvent government,' the Administrator said.

Johnson Space Center

Dr. Carolyn Huntoon has been appointed Director of the Johnson Space Center, Houston, Tex. She has served as the Director of Space and Life Sciences at the Johnson Space Center since 1987. Previously she was the Associate Director of the center, assisting the Director and Deputy Director in its management.

Huntoon joined the Johnson Space Center in 1970 as a Senior Research Physiologist and was responsible for conducting research programs in the area of medical endocrinology and biochemistry. She is a pioneer in human life science research, having created and supervised projects in the Apollo, Skylab, Apollo-Soyuz, and Space Shuttle programs. She is the author of numerous technical papers and a fellow of the Aerospace Medical Association and the American Astronautical Society.

Huntoon is a recipient of the Arthur S. Fleming Award, the National Civil Service League Career Achievement Award for her work as a federal civil servant and numerous other awards. She received her doctorate degree from Baylor University, College of Medicine, in 1968.

Marshall Space Flight Center

G.P. (Porter) Bridwell has been appointed Director of the Marshall Space Flight Center, Huntsville, Ala. The current Director, Thomas (Jack) J. Lee, will become the agency's Special Assistant for Access to Space.

Bridwell served most recently as Deputy Manager of the Space Station Redesign Team and as a leader of the U.S.-Russian Space Station feasibility study this past summer. He has had a distinguished career with NASA since 1962. He previously served as Manager of the Shuttle Projects Office where he directed the Space Shuttle project activities assigned to the Marshall Space Flight Center, including the Space Shuttle main engine, External Tank, Redesigned Solid Rocket Motor, Solid Rocket Booster, Advanced Solid Rocket Motor, related systems and test activities and activities at the Michoud Assembly Facility.

Bridwell managed the performance of the Marshall Space Flight Center and industry contractors in the planning, design, engineering, integration, development, production testing, delivery and operations of Space Shuttle elements furnished to the center, ensuring that cost, schedule and performance goals were met. "Under Mr. Bridwell's direction," Goldin said, "Marshall's major role will be as the Center of Excellence for propulsion and providing access to space for the nation. The restoration of an active and vital launch capability is essential to the nation's future activities in space."

Lewis Research Center

Donald J. Campbell has been appointed Director of the Lewis Research Center, Cleveland, Oh. Campbell currently serves as Director of Science and Technology in the Office of the Assistant Secretary of the Air Force for Acquisition, Washington, D.C., an appointment he has held since April, 1992. He was responsible for monitoring the Air Force science and technology program, and other selected research, development, technology and engineering programs.

Campbell earned a bachelor's degree in mechanical engineering from Ohio Northern University in 1959 and a master's degree in the same subject in 1974 from Ohio State University. He has completed several management courses at the Brookings Institution. He began his government career in July, 1960 as a test engineer for gas turbine engines and engine components in the Air Force Aero Propulsion Laboratory, Wright-Patterson Air Force Base, Dayton, Oh. He worked as a project engineer and later as a program manager for advanced air breathing propulsion systems.

Campbell has extensive experience in large and small aircraft propulsion systems, ramjet engines, aerospace power systems and fuels and lubricants. He was appointed Director of the Aero Propulsion and Power Laboratory, Wright-Patterson Air Force Base, in January, 1990. He served as the senior civilian executive of the laboratory, responsible for power and propulsion research and development technology activities for future Air Force systems. Campbell was the first civilian director of aeronautics propulsion and power technology since 1928, and only the second civilian to serve in that capacity. He is a native of Ohio.

"Under Mr. Campbell's direction, the Lewis Research Center will fulfill a vital need as the nation's Center of Excellence for advanced air breathing propulsion systems in support of America's Aeronautics industry." Goldin said.

KEY APPOINTMENTS AT NASA HEADQUARTERS

Associate Deputy Administrator (Technical)

Michael I. Mott has been appointed Associate Deputy Administrator (Technical). He will report to the Administrator and provide independent technical analyses in the conceptual and formulative stages of programs. In addition, he will support on-going reviews of major programmatic and institutional issues.

Mott previously served as the Director for New Initiatives and Concept Development for General Research Corporation. He has served on numerous NASA civil space panels and review groups. These include the Hubble Space Telescope Servicing and Repair Mission Review Group, the Space Station Redesign Team, the NASA Administrator's Vision Panel, the Tethered Satellite System Prelaunch Review Group and the Mission Review Group for Satellite Rescue, Servicing and Repair.

Mott served with distinction in the United States Marine Corps. Following graduation from the U.S. Naval Test Pilot School, he was assigned as a test project officer at the Naval Air Test Center, participating and flying in 89 major test projects. He also served as the Deputy Director of the Technical Support Group for the Deputy Chief of Naval Operations (Naval Warfare), the Director of the Aviation Development Tactics and Evaluation Department at Marine Aviation Weapons and Tactics Squadron-One and as a panel member of the Naval Research Advisory Committee. A native of Nashville, Tenn., Mott is a graduate of Vanderbilt University and holds a master of science degree from the University of Southern California.

Special Assistant for Access to Space

Thomas (Jack) J. Lee has been appointed Special Assistant for Access to Space. Making the appointment, Goldin said that Lee "will be responsible for leading NASA efforts to help define a technology program for the future that will help the United States retain its leadership in space. This technology is critical to ensuring the retention of the nation's continuing access to space." Goldin said that with his experience as Marshall Space Flight Center director, Lee " brings the leadership and skills that are so essential to this position."

Associate Administrator for Mission to Planet Earth

Dr. Charles F. Kennel, from the University of California at Los Angeles, has been appointed as the Associate Administrator for Mission to Planet Earth. Kennel has a long and distinguished career in space science. He received an A.B. from Harvard College in 1959, and a Ph.D. in Astrophysical Sciences from Princeton University in 1964. He has been a tenured member of the UCLA Department of Physics since 1967, and was its chairman from 1983 to 1986. He became a member of UCLA's Institute of Geophysics and Planetary Physics in 1971, and is an Associate Director of UCLA's Institute for Plasma Physics and Fusion Research.

Kennel has been a Fulbright scholar, a Guggenheim scholar, and a Fairchild Professor at the California Institute of Technology. He is a fellow of the American Geophysical Union, the American Physical Society, and the American Association for the Advancement of Science, and a member of the International Academy of Astronautics and the U.S. National Academy of Sciences.

Chief Scientist for Mission to Planet Earth

Dr. Mark Abbott has been named Chief Scientist of the Office of Mission to Planet Earth. Abbott has been serving as a Professor of the College of Oceanic and Atmospheric Sciences at Oregon State University. Abbott has played an active role in the Earth Observing System since 1989. He has served in the College of Oceanographic and Atmospheric Sciences since 1988, at The Scripps Institute of Oceanography and earlier as a member of the Oceanographic Group at the Jet Propulsion Laboratory, Pasadena, Calif.

Director, Wind Tunnel Program Office

Lawrence J. Ross, formerly Director of the Lewis Research Center, has been appointed as the Director of the Wind Tunnel Program Office, reporting to the Office of the Administrator. Goldin said that NASA's test facilities are "critical to the country's aeronautics research program and the retention of America's leadership in aeronautics. The aeronautics industry accounts for a million high quality jobs throughout the United States." Ross, he said, "will be responsible for laying out a bold and innovative facility program to support the research needed for the next two decades."

SPACE STATION PROGRAM ANNOUNCEMENTS

Noting that the Space Station Program has been expanded to include Phase I Shuttle-Mir missions, Phase II United States-Russian activities and the Phase III International Space Station, the Administrator announced several key appointments in the program.

Deputy Associate Administrator for Space Station

Wilbur C. Trafton has been appointed Deputy Associate Administrator for Space Station. Prior to joining NASA, he was president of Micro Research Industries, a computer systems integration and software development company in Alexandria, VA.

Trafton retired as a Captain from the United States Navy in October, 1992 and last served as the Assistant Chief of Staff for Plans and Policy, U.S. Pacific Fleet. In this position he coordinated international military and diplomatic negotiations with Pacific Rim nations, including Russia. He planned and managed the withdrawal of all U.S. Naval forces from the Philippines. Trafton has held a number of other key command and management positions in the Navy and with the Department of Defense.

Born in Tela, Honduras, he holds a master of science degree from the U.S. Naval Postgraduate School.

Space Station Program Manager

Goldin said that the increase in the responsibilities of the Deputy Associate Administrator for Space Station has required a corresponding increase in the duties of the Program Office at the Johnson Space Center.

As a result, Randy Brinkley has been assigned as the Space Station Program Manager, with the responsibilities for management of all United States-Russian activities. He will be charged with working with Russia in implementing the United States-Russian activities for Phase I and Phase II, and working with international partners and Russia "to ensure implementation of the International Space Station," Goldin said. Brinkley was mission director for the recent Hubble Space Telescope Servicing Mission (STS-61).

Manager of Technical Activities

Captain William Shepherd, USN, will continue in his current capacity as the manager for all technical activities related to the International Space Station, reporting to Brinkley. "This management structure will enable Captain Shepherd to focus his expertise on the continued design, development, and assembly of the Space Station," the Administrator said.

Deputy Program Manager for Business

Daniel C. Tam has been assigned as the Deputy Program Manager for Business in the Space Station Program Office at the Johnson Space Center. Serving in this capacity he will be responsible for all the business management operations for the Space Station Program.

- More -

Tam has spent practically all of his professional career at TRW. He received a bachelor of science degree in mechanical engineering, and a masters degree in economics from the University of California at Davis and a Masters degree in business administration from UCLA. Since starting at TRW in 1975, Tam has held a number of key management positions. In January, 1993 Tam was named as the Manager of Acquisitions for the Space and Technology Group and was responsible for subcontracts, purchasing, proposal operations, facilities contracts, procurement review and system support, as well as the Small and Disadvantaged Business Office in the Space and Electronics Group.

NEW LEADERSHIP FOR NASA ADVISORY COUNCIL

Dr. Bradford W. Parkinson has been appointed head of the NASA Advisory Council. Parkinson was the original Program Director of the Defense Department's Global Positioning Satellite System. He has a broad background in guidance, control, astrodynamics, simulation, avionics, navigation and software engineering. He is currently a Professor of Aeronautics and Astronautics at Stanford University. Dr. Parkinson is also leading a Stanford research group that is developing innovative uses of the Global Positioning Satellite for aviation applications.

Parkinson received his Ph.D. in aeronautics and astronautics from Massachusetts Institute of Technology and Stanford. He was elected to the National Academy of Engineering and is a Fellow of the Royal Institute of Navigation and the American Institute of Aeronautics and Astronautics. He was awarded the Royal Institute of Navigation's Gold Medal and has received the Kirschner Award from the Institute of Electrical and Electronic Engineers. Parkinson has authored more than 50 papers on the subjects of guidance, navigation, and control.

The Advisory Council and its related committees provide advice and counsel to the Administrator on NASA's programs and policies. Parkinson has most recently served as a member of the Advisory Committee on the Redesign of the Space Station and the Hubble Space Telescope Review Committee.

Anne L. Accola has been appointed Staff Director of the NASA Advisory Council. Accola received a bachelor of science degree from Colorado State University and a master of science degree in computer science from the University of Wisconsin. She has extensive experience in NASA, serving in a number of key technical and management positions since joining NASA in 1967.

"I am extremely pleased with the quality of these appointments," said Goldin. "Their willingness to serve clearly shows that outstanding scientists, engineers, and managers, as in the early days of our Nation's space program, are willing to join NASA to help ensure America's leadership in space and aeronautics, and to help NASA return to the future."

- end -

NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

Kyle Herring
RELEASE: 94-003

For Release:
January 10, 1994
2 p.m. CST

ASTRONAUTS SELECTED FOR ATLANTIS' STS-66 MISSION

Air Force Lieutenant Colonel Donald R. McMonagle has been selected to command Space Shuttle Mission STS-66 aboard Atlantis in the Fall of 1994. The mission, called ATLAS-03, will continue the series of Spacelab flights to study the energy of the sun and how it affects the Earth's climate and environment.

The remaining crew members for the third Atmospheric Laboratory for Applications and Science mission include USAF Major Curtis L. Brown, Jr., Pilot; mission specialist Scott E. Parazynski, M.D.; mission specialist Joseph R. Tanner and mission specialist Jean-Francois Clervoy, European Space Agency astronaut. Ellen Ochoa, Ph.D., earlier was named Payload Commander for the flight.

In addition to the ATLAS-03 investigations, the mission will include deployment and retrieval of the Cryogenic Infrared Spectrometer Telescope for Atmosphere, or CRISTA. Mounted on the Shuttle Pallet Satellite, the payload is designed to explore the variability of the atmosphere and provide measurements that will complement those obtained by the Upper Atmosphere Research Satellite launched aboard Discovery in 1991. CRISTA-SPAS is a joint U.S./German experiment.

McMonagle, 41, flew as a mission specialist aboard Discovery's STS-39 mission in April/May 1991. He also was pilot on the crew of STS-54 in January 1993. Born in Flint, Mich., McMonagle received a bachelor of science degree in astronautical engineering from the U.S. Air Force Academy in 1974 and a master of science degree in mechanical engineering from California State University-Fresno in 1985.

Brown, 37, served as the Pilot aboard Endeavour on Mission STS-47, Spacelab-J, in September 1992. Brown was born in Elizabethtown, N.C., and received a bachelor of science degree in electrical engineering from the Air Force Academy in 1971.

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Parazynski, 32, was born in Little Rock, Ark., but considers Palo Alto, Calif., and Evergreen, Colo., to be his hometowns. Parazynski received his doctorate in medicine from Stanford Medical School in 1989. Parazynski was selected for the astronaut corps in March 1992. STS-66 will be his first Space Shuttle mission.

Tanner, 43, was born in Danville, Ill., and received his bachelor of science degree in mechanical engineering from the University of Illinois in 1973. He has been with NASA since 1984, serving as an aerospace engineer and research pilot. Tanner instructed astronaut pilots in Shuttle landing techniques aboard the Shuttle Training Aircraft and served as aviation safety officer. Prior to being selected to the astronaut corps as a member of the class of 1992, Tanner was the Deputy Chief of the Aircraft Operations Division at the Johnson Space Center, Houston. He will be making his first Space Shuttle flight.

Clervoy, 35, was born in Longeville-le-Metz, France, but considers Toulouse, to be his hometown. He received his bachelors degree from the College Militaire de Saint Cyr l' Ecole in 1976 and graduated in 1987 from the Ecole du Personnel Navigant d' Essais et de Reception, Istres, as a flight test engineer. In August 1992, Clervoy reported to the Johnson Space Center as part of the astronaut class of 1992. STS-66 will be his first Space Shuttle mission.

- end -

NASA News

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Kyle Herring
RELEASE: 94-004

For Release:
January 10, 1994
2 p.m. CST

CREW SELECTED FOR STS-67 ASTRONOMY MISSION

Veteran astronaut Stephen S. Oswald will command the STS-67 flight, an astronomy mission aboard Space Shuttle Columbia in late 1994. The mission objectives are to study the far ultraviolet spectra of faint astronomical objects and to study the polarization of ultraviolet light coming from hot stars and galaxies.

Joining Oswald on the mission are Air Force Major William G. Gregory, who will serve as the Pilot; Navy Lieutenant Commander Wendy B. Lawrence, mission specialist; and payload specialists Ronald A. Parise and Samuel T. Durrance. They will join Payload Commander Tamara E. Jernigan, named to the crew in August 1993, and mission specialist John M. Grunsfeld, named in October 1993.

The Astro-2 mission is the second dedicated to the conduct of astronomical observations in the ultraviolet spectral regions. The experiments will observe a variety of targets ranging from objects inside the solar system to individual stars, nebulae, supernova remnants, galaxies and active extragalactic objects. The first Astro mission was flown in December 1990 aboard Columbia.

Oswald, 42, was Pilot on two missions aboard Discovery, STS-42 and STS-56 flown in January 1992 and April 1993, respectively. He was born in Seattle, Wash., but considers Bellingham, Wash., his hometown. Oswald received a bachelor of science degree in aerospace engineering from the U.S. Naval Academy in 1973.

Gregory, 36, was born in Lockport, N.Y., and received a master of science degree in engineering mechanics from Columbia University in 1980 and a master of science

-more-

degree in Management from Troy State in 1984. Gregory was selected for the astronaut corps in 1990. STS-67 will be his first Space Shuttle mission.

Lawrence, 34, was born in Jacksonville, Fla., and received a bachelor of science degree in ocean engineering from the U.S. Naval Academy in 1981. Her 1988 master of science degree in ocean engineering is from the Massachusetts Institute of Technology. Lawrence is a member of the astronaut class of 1992. This will be her first Space Shuttle mission.

Parise, 42, was born in Warren, Ohio, and received a a doctor of philosophy degree in astronomy from the University of Florida in 1979. Parise is a member of the research team for the Ultraviolet Imaging Telescope, one of the instruments scheduled for flight as part of the Astro payload. STS-67 will be his second flight as a payload specialist having served in that capacity on the first Astronomy payload mission aboard Columbia on the STS-35 flight in December 1990.

Durrance, 50, was born in Tallahassee, Fla., but considers Tampa, to be his hometown. He received a doctor of philosophy degree in astrogeophysics from the University of Colorado in 1980. Durrance is a Research Scientist in the Department of Physics and Astronomy at Johns Hopkins University, Baltimore, Md. He is Assistant Project Scientist for the Hopkins Ultraviolet Telescope, one of the instruments scheduled to fly as part of the Astro Observatory. Durrance is making his second flight as a payload specialist. He also served as a payload specialist on Columbia's Astro-1 mission, STS-35, in December 1990.

- end -

NASA News

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For Release:

Brian Welch
RELEASE 94-005

January 10, 1994

ABBEY NAMED DEPUTY AT JSC; WEITZ TO RETIRE IN APRIL

George W.S. Abbey was named Deputy Director of the Johnson Space Center today by the new Director, Dr. Carolyn L. Huntoon.

Abbey succeeds Paul J. "P.J." Weitz, who will serve as the Acting Associate Director to help the transition of the new Center management team until his planned retirement in April. Weitz has served as the Center's Deputy Director since 1987 and Acting Director since the retirement of Aaron Cohen in August 1993.

"I am pleased to welcome George Abbey back to JSC in a role that will capitalize on his unique experience and organizational skills," Huntoon said. "With the upcoming retirement of P.J. Weitz, George has large shoes to fill, but he brings a wealth of expertise to the job, and his insights will be invaluable as the JSC team meets the challenges ahead of us in the 1990s."

Abbey is a 1954 graduate of the U.S. Naval Academy who went on to become a U.S. Air Force pilot in the late 1950s. While serving as an Air Force officer from 1959 to 1964, he was involved in the Air Force DYNASOAR program. He was detailed to the Johnson Space Center (then the Manned Spacecraft Center) in 1964 and resigned his commission to become a member of the Civil Service staff in 1967. In January of that year, he became technical assistant to Apollo Program Manager George M. Low.

In 1969, Abbey became technical assistant to Robert Gilruth, the Director of the Manned Spacecraft Center. In 1976, Abbey became Director of Flight Operations, responsible for planning and overall direction of flight crews and flight control

-more-

activities for all U.S. human space flights. In a 1985 reorganization, Abbey became director of the newly formed Flight Crew Operations Directorate, responsible for management and direction of flight crews as well as the Center's fleet of aircraft.

In 1988, Abbey was named Deputy Associate Administrator for Space Flight at NASA Headquarters in Washington. He most recently served as Special Assistant to NASA Administrator Daniel S. Goldin.

Weitz, who plans to retire in April 1994, will serve as Acting Associate Director of JSC until his retirement. He has been a NASA Astronaut since 1966, and has logged a total of 793 hours in space on two space flights. Weitz received his commission as an ensign in the U.S. Navy through the Naval ROTC program at Pennsylvania State University before earning his pilot wings in 1956. He served in various naval squadrons until he was selected as an astronaut in 1966. He has logged more than 7,700 hours flying time, with 6,400 hours in jet aircraft.

Weitz, one of 19 astronauts selected in the class of 1966, served as pilot on the crew of Skylab-2 from May 25 to June 22, 1973. Skylab-2 was the first flight of astronauts to the orbital workshop, and the crew logged 672 hours and 49 minutes aloft, establishing what was then a new world record for a single space mission. During that flight, Weitz also logged 2 hours and 11 minutes of spacewalk time in a dramatic repair of mechanisms that had been damaged during the launch of Skylab on May 14, 1973.

His second space flight was as the commander of STS-6, the maiden voyage of the Space Shuttle *Challenger* in April, 1983. During the mission, the crew deployed the first Tracking and Data Relay Satellite, conducted the first spacewalk of the Shuttle era, and performed numerous experiments in materials processing. The mission duration was 120 hours.

Weitz has been awarded the NASA Distinguished Service Medal, the Navy Distinguished Service Medal, the Robert J. Collier Trophy for 1973, the Robert H. Goddard Memorial Trophy for 1975 and the NASA Space Flight Medal.

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NASA News
National Aeronautics and
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Washington, D.C. 20546
AC 202 358-1600

For Release

Ed Campion
Headquarters, Washington, D.C.
(Phone: 202/358-1780)

January 11, 1994

Brian Welch
Johnson Space Center, Houston
(Phone: 713/483-5111)

RELEASE: 94-6

ABBEY NAMED JSC DEPUTY DIRECTOR; WEITZ TO RETIRE IN APRIL

George W.S. Abbey was named Deputy Director of the Johnson Space Center (JSC), Houston, today by the new center Director Dr. Carolyn L. Huntoon.

Abbey succeeds Paul J. "P.J." Weitz, who will serve as the Acting Associate Director during the transition of the new center management team until his planned retirement in April. Weitz has served as the center's Deputy Director since 1987 and Acting Director since the retirement of Aaron Cohen in August 1993.

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- more -

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- end -

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Space Administration
Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release:

Brian Welch
RELEASE: 94-013

February 1, 1994

HUNTOON ANNOUNCES ORGANIZATIONAL CHANGES AT JSC

Assignments for several key staff members and the elimination of three offices were announced today by Johnson Space Center Director Dr. Carolyn L. Huntoon.

"These changes are the first of many that will help us align the Center's organizations to more effectively support the challenges we face in the 1990s," Huntoon said. "Since JSC was named the host center for the Space Station program, we have been working to find new efficiencies and better ways to support such a large undertaking. These changes will help us get where we want to go."

The organizational changes include abolishment of the New Initiatives Office and the closeout of the Space Station Freedom Projects Office. Huntoon also announced that the functions of the Joint U.S. Russian Federation Programs Office will be absorbed by the new Space Station Program Office.

"In order to more effectively focus our efforts on our principal program responsibilities, we will begin immediately the process of realigning the functions and personnel of the New Initiatives Office," Huntoon said.

With staffing of the new Space Station Program Office well underway and most employees of the old Freedom Projects Office reassigned elsewhere, that office is now officially closed, Huntoon announced. In addition, the functions of the U.S./Russian Federation Programs Office will be combined with the Space Station Program Office.

-more-

Huntoon also announced several key personnel assignments. Joseph P. Loftus, formerly Associate Director (Plans), will join the Space and Life Sciences Directorate, where he will continue his efforts to understand and minimize problems associated with orbital debris. JSC is one of the world's leading organizations in analyzing this emerging spacefaring concern.

Clarke C. Covington, formerly special assistant to the Director, will move to the Center Operations Directorate, where he will conduct a bottom-up review of all Center facilities in support of the Space Shuttle and Space Station Programs. "Clarke will make recommendations for any immediate changes which will allow us to more effectively support those programs," Huntoon said.

Nancy G. Robertson, formerly assistant to the Director for education, will move to the Public Affairs Office and lead a newly formed Education Branch.

Harold S. Stall will resume his role as Director, Public Affairs, returning from his assignment as the primary JSC interface with Space Center Houston. Stall will continue to serve as President of the Manned Space Flight Education Foundation, Inc., which operations Space Center Houston.

Douglas K. Ward, who has served as Acting Director, Public Affairs, will continue as Deputy Director of that organization and assume responsibility for program support. In this role, he will be principal spokesperson for the Space Station Program and will serve as a focal point to assure that JSC public affairs resources are provided to the Space Station and Space Shuttle programs.

Huntoon also announced the formation of a small office on her staff to focus JSC efforts in technology transfer and commercialization. Henry Davis, formerly of Corning, Inc., will head the office as a special assistant to Huntoon.

# # #

NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
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For Release:

Kari Fluegel
RELEASE: 94-014

February 2, 1994

NASA MARKS SPACE STATION MILESTONE

NASA passed a major milestone in the Space Station Program Tuesday when agency and contractor officials signed documents that mark the end of the Freedom Work Package contracts, thus concentrating responsibility for the design, development and integration of the program under a single prime contract with Boeing Defense and Space Group, Seattle.

"This event is just one indicator that work on the International Space Station is on track and moving ahead," said Randy Brinkley, Manager of the NASA Space Station Program Office, Houston. "A large group of people has been working very hard over the last several months to make the transition from the Freedom program to our current redesigned program. Because of their efforts, we are well on our way to having an international laboratory in space."

One of the documents signed yesterday was a major modification to the Nov. 15, 1993, letter contract between NASA and Boeing. This modification changes Boeing's scope of work from a transitional contract to a hardware design and development contract. A final contract between NASA and Boeing will be definitized later this year.

Boeing was designated as the prime contractor in August 1993 following a recommendation by the Station Redesign Team to strengthen Space Station integration by realigning the separate hardware development contracts under a single prime contractor. As the prime contractor, Boeing will be responsible for the design, development, physical and analytical integration, and test and delivery of the Space Station vehicle. After contract realignment, Boeing will be responsible for the management of two major subcontracts with McDonnell Douglas and Rocketdyne.

"This contract is a major milestone for Boeing," said Larry Winslow, Boeing Vice President for the Space Station Program. "We are excited to lead the team to design, build and launch a superb orbiting laboratory."

Four party agreements also were signed which will officially close off the three work package contracts with the Boeing Defense and Space Group (Work Package 1), McDonnell Douglas Corp. (Work Package 2) and the Rocketdyne Division of Rockwell International (Work Package 4). The four-party agreements, known as novation, mark the end of the work package structure that existed under the Freedom program.

The work formerly performed by the three work package contractors will continue with McDonnell Douglas and Rocketdyne now being subcontractors to Boeing. McDonnell Douglas and Rocketdyne will continue to be responsible for their specific hardware development efforts and for supporting Boeing in sustaining engineering activities.

Overall, the agreements signal the end of the transition from the Space Station Freedom program to the redesigned space station program.

The International Space Station will be a multi-functional orbiting laboratory used for scientific and technology research in the unique microgravity environment of space. The effort pulls together capabilities and resources from NASA; the European Space Agency; NASDA, the Japanese Space Agency; the Canadian Space Agency; and most recently, the Russian Space Agency.

On-orbit construction of the facility will begin in 1997 and will use the launch capabilities of both the United States and Russia. A U.S. Laboratory module will be operational after the fourth U.S. assembly flight. U.S. launches will continue to add Japanese and European laboratory modules, a Canadian-built robotic arm and a habitation module. Russia will fly a "space tug," a science module, a power platform and a number of research modules.

- end -

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February 3, 1994

RELEASE: 94-017

NASA/INDUSTRY PIONEER TECHNOLOGY REINVESTMENT PROGRAM

NASA and Hi-Shear Technology Corp., Torrance, Calif., have teamed together in a cooperative agreement as part of the Technology Reinvestment Program (TRP) to develop a new generation of portable emergency rescue equipment. This is the first such government/industry TRP partnership.

The equipment will use NASA-developed pyrotechnical technology to modernize current hydraulic-powered cutters used by fire and rescue teams to free accident victims from wreckages. The $1.6 million program will be developed with the assistance of the Torrance, Calif., fire department.

Current emergency rescue equipment uses expensive, gasoline-powered hydraulic pumps, hoses and cutters to perform these rescue services. Using NASA technology and Hi-Shear Technology research, the new generation cutters will eliminate umbilical connections to cumbersome hydraulic pumps by using pyrotechnic cartridges, which will create an estimated 50 percent weight savings and a 70 percent cost reduction in the equipment.

This new generation of equipment will be cost-effective for smaller fire departments and rescue squads as well as portable enough for military and civil search and rescue helicopter operations.

The joint effort by NASA and Hi-Shear Technology represents an example of NASA's desire to transfer government-sponsored technology applications over to America's commercial markets. This activity will preserve an important aerospace industry by transitioning this government-developed technology into commercial products and should generate millions of dollars in cost savings for local, state and federal government rescue services.

The Department of Defence Advanced Research Projects Agency is the TRP lead agency. NASA, the Departments of Commerce, Energy and Transportation and the National Science Foundation are participating members in the joint Technology Reinvestment Program.

- end -

NASA News

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February 4, 1994

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RELEASE: 94-019

NASA TRACKS LAND-SURFACE MOVEMENT IN JAN. 17 EARTHQUAKE

Oat Mountain in the Santa Susana range, just north of the San Fernando Valley, jumped several inches during the 6.6 earthquake that struck Los Angeles on Jan. 17, said a scientist at NASA's Jet Propulsion Laboratory (JPL), Pasadena, Calif.

Other locations, including some communities, also were jerked into new positions, said Dr. Andrea Donnellan, a JPL geophysicist.

The 3,618-foot-high (1,103 meters) mountain, jumped up 14.8 inches (38 centimeters). It also moved north 6.2 inches (16 centimeters) and west 5.5 inches (14 centimeters).

JPL has continuously operated stations at Oat Mountain and at Cal State University, Northridge, since the earthquake. The data suggest that Oat Mountain has risen about one more inch (2 to 3 centimeters) since the quake. The site also moved slightly more than an inch (3 centimeters) back to the south after the 5.0 aftershock Jan. 29.

"This is mountain building in progress," said Donnellan. Donnellan and her colleagues measured the movements of the mountain and several other Southern California locations following the devastating earthquake using Global Positioning System (GPS) instruments -- ground receivers that track orbiting navigation satellites.

- more -

The Defense Department's GPS network includes 24 Earth-orbiting satellites at 12,400 miles (20,000 kilometers) that send microwave transmissions to ground receivers worldwide.

NASA collects data from a global network of 45 stations. The data tells scientists how far the Earth's surface has moved in any given period of time. In addition, portable instruments are deployed at other locations around the world.

Donnellan said the 6.6 quake occurred on a fault at the southern and eastern edge of the Ventura Basin, a 62-mile (100-kilometer) by 6-mile (10 kilometer) sub-surface feature that stretches from the Pacific Ocean to the San Fernando Valley.

At 9.3 miles (15 kilometers) deep, the basin is one of the deepest sedimentary basins on Earth, she said.

Donnellan had been studying the basin since 1987 and came to the conclusion its deep faults were capable of causing a serious earthquake. In a paper she published in the science journal Nature last November, she predicted the basin could suffer an approximately 6.4-magnitude earthquake.

Her studies, using the GPS instruments, indicated the basin was being squeezed from north and south about 0.3 inches (7 millimeters) a year by the movement of the Santa Susana and Santa Ynez ranges.

"It's a north-south closure of the valley," she said. The figures came from analysis of data recorded in the GPS receivers at several locations around the basin.

She said she and her colleagues used computer modeling to look at the faults beneath the basin from a considerable depth up to the surface and saw they were locked, that is, not slipping to relieve strain. From that model they calculated the potential magnitude of a quake that could strike the region. Although the scientists predicted the locale and size of the earthquake, they could not predict when such a quake might occur.

The Oat Mountain receiver was the location closest to the quake's epicenter and over the highest density of aftershocks. The epicenter was in the valley community of Reseda. The fault, however, is not a single point, but affects a large section of surface ground. The hardest hit area was the community of Northridge, immediately adjacent to Reseda. Most of Northridge overlies the ruptured fault plane.

Several other communities along the basin also were jerked into new positions. GPS data indicated that the community of Fillmore in Ventura County, which lost much of its downtown section, moved west 2 inches (5 centimeters). The region near Castaic moved southwest 4.3 inches (11 centimeters) and down 3.5 inches (9 centimeters). Santa Paula and Moorpark also were moved westward 1 to 2 inches (approximately 2.5 to 5 centimeters) and the Point Dune area moved due north 1.5 inches (4 centimeters).

In addition to analyzing scientific data from the earthquake, NASA's Airborne Science and Applications program has been conducting surveys of the damage in the area. Data from instruments aboard NASA's C-130 and ER-2 aircraft has been provided to the Federal Emergency Management Administration and local governments to help them assess the damage.

Both JPL's GPS studies and the aircraft surveys, managed by NASA's Ames Research Center, Mountain View, Calif., are funded by NASA's Office of Mission to Planet Earth, Washington, D.C. Mission to Planet Earth (MTPE) is studying how Earth's global environment is changing. Using the unique perspective available from space, NASA is observing, monitoring and assessing large-scale environmental processes, focussing on climate change.

MTPE satellite data, complemented by aircraft and ground data, is allowing scientists to better understand environmental changes and to distinguish human-induced changes from natural changes. MTPE data, which NASA is distributing to researchers worldwide, is essential to humans making informed decisions about protecting their environment.

- end -

NASA News

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February 7, 1994

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EDITORS NOTE: N94-014

HST IMAGES AVAILABLE OF COMET ON COLLISION COURSE WITH JUPITER

A color image of Comet P/Shoemaker-Levy 9 (1993e) is being made available to the media from NASA and its Hubble Space Telescope Science Institute, Baltimore, Md. The three-frame, 8 x 10 image shows the comet broken into about 20 pieces as the result of the gravitational pull of Jupiter when the comet passed by the massive planet in summer 1992.

The cometary fragments are on a collision course with Jupiter and are expected to plunge into the Jovian atmosphere during a 5-1/2-day period centered on July 19, 1994, possibly with spectacular results.

The images are from July 1993, which is prior to servicing of Hubble, and from January 1994, a month after the space telescope was equipped with improved optics by astronauts on an 11-day mission aboard the Space Shuttle Endeavour.

Images are available from three locations: The Hubble Space Telescope Science Institute, Baltimore, Md. (410/338-4707); NASA's Goddard Space Flight Center, Greenbelt, Md. (301/286-5565); and NASA Headquarters, Washington, D.C. (202/358-1900). For color, request photo 94-HC-39 -- for black and white, 94-H-42 at NASA Headquarters. Images are EMBARGOED until 11 a.m. EST Today.

- end -

NASA News

National Aeronautics and
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February 7, 1994
FOR RELEASE AT 2 P.M. ET TODAY

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RELEASE: 94-020

NASA BEGINS DEVELOPMENT OF NEW MARS EXPLORATION PROGRAM

NASA will continue to explore Mars with a new exploration strategy in fiscal year 1995. The Mars Surveyor program calls for start of development of a small orbiter that will be launched in November 1996 to study the surface of the red planet.

The Mars Surveyor orbiter will lay the foundation for a series of missions to Mars in a decade-long program of Mars exploration. The missions will take advantage of launch opportunities about every 2 years as Mars comes into alignment with Earth.

NASA requested $77 million in development costs in FY 1995 for the new Mars orbiter. The announcement was made during NASA's press briefing on the 1995 budget request. The 1995 fiscal year runs from Oct. 1, 1994, to Sept. 30, 1995.

The Mars Surveyor program will be conducted within the constraints of a cost ceiling of approximately $100 million per year. The orbiter will be small enough to be launched on a Delta expendable launch vehicle and will carry roughly half of the science payload that flew on Mars Observer, which was lost on Aug. 21, 1993. The specific instruments will be selected later.

NASA's Jet Propulsion Laboratory (JPL), Pasadena, Calif., will issue a request for proposals to industry in mid-March to solicit potential spacecraft designs. Selection of a contractor to build the spacecraft will be made by July 1.

- more -

NASA envisions an orbiter/lander pair of spacecraft as the next in this series of robotic missions to Mars.

The orbiter planned for launch in 1998 would be even smaller than the initial Mars Surveyor orbiter and carry the remainder of the Mars Observer science instruments. It would act as a communications relay satellite for a companion lander, launched the same year, and other landers in the future, such as the Russian Mars '96 lander. The U.S. Pathfinder lander, set to land on Mars in 1997, will operate independently of the Mars orbiter.

The 1998 orbiter/lander spacecraft would be small enough to be launched on an expendable launch vehicle about half the size and cost of the Delta launch vehicle.

JPL will manage mission design and spacecraft operations of the Mars Surveyor for NASA's Office of Space Science, Washington, D.C.

- end -

FOR IMMEDIATE RELEASE
FACT SHEET

MARS SURVEYOR PROGRAM
Mars Orbiter Spacecraft

The Mars orbiter will be a polar-orbiting spacecraft at Mars whose mission is to fulfill the Mars science objectives of the failed Mars Observer mission.

Launched with a Delta II vehicle from Cape Canaveral in November 1996, the spacecraft will cruise 10 months to Mars, where it will be initially inserted into an elliptical capture orbit. During the following 4-month period, thruster firings and aerobraking techniques will be used to reach the nearly circular, polar mapping orbit with a 2-hour period. Mapping operations are planned to begin in late January 1998.

Aerobraking, which uses atmospheric drag forces on the spacecraft to remove orbital energy, provides a means of minimizing the amount of fuel required to reach the low Mars orbit.

The spacecraft will carry a subset of the Mars Observer instrument payload and will use these instruments to acquire data of Mars for a full Martian year (2 Earth years). The spacecraft then will be used as a data relay station for signals from U.S. and international landers and low altitude probes for an additional 3 years.

The orbiter is the first mission of a new, decade-long program of robotic exploration of Mars -- the Mars Surveyor Program. This will be an aggressive series of orbiters and landers to be launched in every Mars opportunity. It will be affordable, costing about $100 million per year; engaging to the public, with global and close-up images of Mars; have high scientific value; employ a distributed risk strategy so that no single element loss will result in the total loss of data planned in a given opportunity; and use significant advanced technologies.

Landers launched in future years -- in 1998 and 2001 -- will capitalize on the experiences of the Pathfinder lander mission to be launched in 1996. Small orbiters launched in the 1998 and 2001 opportunities will carry the remainder of the Mars Observer payload instruments and will serve as data relay stations.

The spacecraft will be acquired from industry through a competitive procurement. The science payload will be provided by government-furnished equipment built as copies of the instruments that flew on Mars Observer. JPL will manage the project for NASA's Solar System Exploration Division and will provide the mission design, navigation and will conduct the mission operations. Tracking and data acquisition will be provided by a 34-meter subnet of the Deep Space Network.

- end -

February 1994

NASA News

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February 10, 1994

RELEASE: 94-024

HIGH-SPEED AIRCRAFT RESEARCH COMBUSTOR TESTS EXCEED GOAL

NASA-industry research experiments to reduce exhaust emissions to environmentally compatible levels for future supersonic airliners have yielded results that substantially exceed program goals.

The tests, which used an engine fuel combustion chamber sector, representing about one-fifth of a full-scale design, beat NASAUs goal of generating no more than 5 grams of oxides of nitrogen (NOx) per kilogram of fuel burned at supersonic flight speed.

Scientific studies suggest that a fleet of future supersonic airliners, equipped with these ultra-low NOx engine combustors, possibly would have relatively small effects on stratospheric ozone.

"Protecting Earth's stratospheric ozone layer is our highest priority," said Louis J. Williams, Director of the High-Speed Research Program at NASA Headquarters, Washington, D.C., "so developing the technology to assure environmental compatibility for future supersonic airliners is the most important goal of our program."

"The results of these initial ultra-low emissions combustor tests make us more confident that weUll achieve that goal," Williams added.

-more-

The combustor sector evaluated was a "Lean Premixed Prevaporized" concept designed by GE Aircraft Engines, Evendale, Ohio. It mixes fuel and air upstream of the burning zone and allows enough time for the liquid fuel to vaporize completely before combustion.

The fuel-air mixture then enters the combustion system and ignites downstream of a flame stabilizer where the speed of the mixture flow is somewhat slower.

"The ultra-low levels of nitrogen oxide we've achieved in these tests are extremely encouraging. It shows that the ultra-low levels we previously saw in the laboratory can transition to combustor hardware," said Richard W. Niedzwiecki, Chief of the Combustion Technology Branch, Propulsion Systems Division at NASA's Lewis Research Center, Cleveland.

NASA also is testing a "Rich Burn-Quick Quench-Lean Burn" concept developed by Pratt Whitney Division of United Technologies, East Hartford, Conn. This design uses two combustion stages to reduce NOx production.

First, excess fuel is put into a small amount of air. This "rich burn" environment causes chemical reactions that minimize NOx emissions. As the mix flows through the combustor, more air is added and combustion is completed in a final fuel-lean burning stage. Experimental work with this concept has been started.

-end-

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Kyle Herring
RELEASE: 94-017

For Release:
February 23, 1994

CAMERON TO MANAGE NASA ACTIVITIES AT STAR CITY, RUSSIA

As part of the new partnership effort between the United States and Russia, NASA today announced that astronaut Kenneth D. Cameron (Col., USMC) has been selected to manage NASA operational activities at Star City and at the Russian control center at Kaliningrad.

As Director of Operations-Russia, Cameron will work with Russian Space Agency engineers and flight controllers on the U.S.-Russian cooperative program and work to bring about continued and enhanced cooperation between NASA and the Russian Space Agency.

Cameron's responsibilities will include supervising NASA astronaut training at Star City, developing training syllabus for Shuttle crew members for Mir rendezvous missions and coordinating training for scientific experimenters; establishing and maintaining operations, operational relationships, plans and procedures to support flight operations between NASA and the Russian Space Agency in joint Shuttle/Mir flights and space station development, assembly and operations.

Cameron is expected to command one of the early Space Shuttle docking missions to the Russian Mir space station.

Cameron and fellow astronauts Norman E. Thagard, M.D., and Bonnie J. Dunbar, Ph.D., who recently were named as the prime and backup crew members for a 3-month flight on the Russian space station Mir, will leave the Johnson Space Center, Houston, for Star City, today.

Thagard and two cosmonauts will be launched aboard a Russian rocket to Mir in March 1995. Three months later, the crew of mission STS-71 will dock Space Shuttle Atlantis to Mir, the first of up to 10 Shuttle visits that will be made to the Russian space station over the 1995-1997 time frame.

- more -

Cameron has flown twice on the Shuttle. He was the Pilot on Atlantis' STS-37 mission in 1991 to deploy the Compton Gamma Ray Observatory. He served as Commander of Discovery's STS-56 flight in 1993 to continue studies of the Earth's atmosphere as part of a series of missions called Atmospheric Laboratory for Applications and Science.

Cameron received a bachelor of science degree in aeronautics and astronautics from the Massachusetts Institute of Technology in 1978 and a master of science degree in the same field from MIT in 1979. Cameron was selected to be an astronaut in 1984. He was born in Cleveland.

-end-

NASA News

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Kyle Herring
RELEASE: 94-019

For Release:
February 28, 1994

ASTRONAUT LINENGER JOINS STS-64 CREW

U.S. Navy Commander Jerry M. Linenger has been added to the crew of STS-64 as a mission specialist. The flight is scheduled for the fall of 1994 aboard Discovery.

Linenger joins USN Captain Richard N. "Dick" Richards, Commander; USAF Colonel L. Blaine Hammond, Pilot; and mission specialists USAF Colonel Carl J. Meade, USAF Lt. Col. Mark C. Lee and USAF Lt. Col. Susan J. Helms all named to the crew in November 1993.

The assignment was made to more efficiently distribute the crew workload for this complex flight, which in addition to payload operations, includes a rendezvous and proximity operations and a spacewalk. The experience gained by Dr. Linenger on this mission also will be of great value in on-going human physiology investigations, said Astronaut Office Chief Robert L. "Hoot" Gibson.

The STS-64 mission will carry the LIDAR In-Space Technology Experiment (LITE), the Robot Operated Materials Processing System (ROMPS) and the Shuttle Pointed Autonomous Research Tool for Astronomy (SPARTAN-201).

LITE will measure atmospheric parameters from a space platform utilizing laser sensors. ROMPS will investigate robot handling of thin film samples. SPARTAN is a free-flying retrievable x-ray astronomy platform.

Linenger, 39, is a member of the astronaut class of 1992 and will be making his first space flight. He received a bachelor of science degree in bioscience from the U.S. Naval Academy in 1977 a doctorate in medicine from Wayne State University in 1981 a master of science degree in systems management from University of Southern California in 1988 a master of public health degree in health policy and a doctor of philosophy degree in epidemiology from the University of North Carolina in 1989. Linenger was born in Mt. Clemens, Mich., but considers Eastpointe, Mich., and Coronado, Calif., to be his hometowns.

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ISY

For Release

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February 28, 1994

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Johnson Space Center, Houston
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RELEASE: 94-31

ASTRONAUT LINENGER JOINS STS-64 CREW

U.S. Navy Commander Jerry M. Linenger has been added to the crew of STS-64 as a mission specialist. The flight is scheduled for the fall of 1994 aboard Discovery.

Linenger joins USN Captain Richard N. "Dick" Richards, Commander; USAF Colonel L. Blaine Hammond, Pilot; and mission specialists USAF Colonel Carl J. Meade, USAF Lt. Col. Mark C. Lee and USAF Lt. Col. Susan J. Helms, all named to the crew in November 1993.

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- end -

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For Release:
February 28, 1994

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RELEASE: 94-32

SUPER LIGHTWEIGHT EXTERNAL TANK TO BE USED BY SHUTTLE

Marshall Space Flight Center (MSFC), Huntsville, Ala., management has received approval to proceed with the development and manufacturing of an improved, lighter version of the Space Shuttle External Tank. The Super Lightweight External Tank will be fabricated of aluminum alloys and incorporate an orthogrid design for the panels which together make the tank 8,000 pounds lighter than the current configuration.

This reduction in weight can be used to increase Shuttle performance, placing typical payloads into higher orbits or at higher inclination to the Equator or placing heavier payloads into low Earth orbit. The Super Lightweight Tank development and production will enhance the Space Shuttle's capability to support the Space Station deployment.

The existing contract for the tank with Martin Marietta will be modified, enabling the contractor to make the required changes. The first Super Lightweight Tank is scheduled for delivery in 1997, with External Tank-96 projected as the first aluminum lithium tank.

Testing of the new configuration will be accomplished at MSFC. The program development cost is estimated at $172.5 million. Each Super Lightweight Tank produced will cost approximately $59 million.

-end-

NASA News

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For Release:

Barbara Schwartz
RELEASE: 94-021

March 3, 1994

AUTONOMOUS ROBOTIC SYSTEM SUCCESSFULLY TESTED

Demonstrating that science is catching up to science fiction, a robotic arm using its own vision-guided intelligent system grasped a freely moving ball aboard NASA's KC-135 reduced gravity aircraft Feb. 10, 1994. The Extravehicular Activity Helper/Retriever robotic system tests are the first to prove that autonomous robots can use computer vision to guide robotic manipulation and grasp of moving objects in microgravity.

"The significance of this successful achievement is that it is a major step towards intelligent robots that can perceive and respond to unstructured environments at the pace imposed by their environments while applying knowledge and skills to accomplish stated goals," said Jon Erickson, chief scientist of the Automation and Robotics Division.

Vision-guided grasping of moving objects is a basic skill both in space helper and retrieval tasks and in accomplishing the transition from flying to attach to a spacecraft. This latter is the case since the spacecraft is moving relative to the robot even if the robot is station keeping with the spacecraft.

A team of JSC engineers and support service contractors from Lockheed Engineering and Sciences Co., Mitre Corp., and GHG Corp., lead by project manager Keith Grimm of the Robotic Intelligence Section, has been working on the system for about a year and a half at a cost of less than $1 million. Grimm said it was worth the "roller coaster" ride on the KC-135 to obtain the better-than-anticipated results.

The robot arm and dextrous hand with its three active and two passive fingers caught the freely-moving four-inch ball seven times in a number of tries during the brief periods of microgravity induced on the aircraft.

The EVA Helper/Retriever's vision system is a commercial real-time stereo camera pair on a pan and tilt unit and a computer processor. The system continuously determines an object's position and velocity and feeds the measurements to the controls that direct the movements of the 7-degrees-of-freedom arm and its hand. The hand has a force-limited adaptive grasp that is able to catch the object without damaging or dropping it.

The commercial manipulator equipment was adapted to increase its speed. The hand was custom designed and built at JSC. Almost all of the computer software for autonomous operation of the system was designed, implemented, and tested at JSC. Grimm hopes that the proof-of-concept leads to continued development of more complex systems and testing on a future shuttle flight. An "intelligent" robot would be able to assist astronauts with many tasks on the space station.

"The robotics that we are working on are in the spirit of human and robot teams working together. We believe that automation and robotics enable human space missions and space exploration. This is not robots in place of humans. This is robots augmenting humans, making it easier for them to do the things they need to do," Erickson said.

Erickson added that this work is a good example of dual-use technology. The robotics systems being developed for use in space can easily be adapted by industry to benefit the public.

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NOTE TO EDITORS:
Video of selected tests may be seen through Internet with World Wide Web (WWW). To access, open the URL:http://tommy.jsc.nasa.gov/ or FTP to gadget.jsc.nasa.gov:/pub/grasp.mpeg.

Still photographs S94-27845, S94-27846, S94-27884 and S94-27894 are available through the Still Photograph Library at 713-483-4231.

NASA News

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For Release:
March 3, 1994

RELEASE: 94-33

RESEARCHER DEVELOPS 1993 INVENTION OF THE YEAR

A system for controlling microbial contamination in drinking water, developed jointly by a NASA engineer and two contractor employees, has been selected as both the NASA Invention of the Year and the NASA Commercial Invention of the Year.

Richard L. Sauer of the Johnson Space Center, Houston, along with co-inventors Gerald V. Colombo and Clifford D. Jolly of Umpqua Research Co., Myrtle Creek, Ore., developed the Regenerable Biocide Delivery Unit for use during future long-term space missions.

This process is an extension of the microbial check valve technology currently in use on board the Space Shuttle. The technology also has applications for long-term space flight.

"The life of an iodinated resin bed for purifying water has been limited until now," Sauer said. With the new system, the purifying resin bed can be regenerated in flight using small amounts of elemental iodine. "For space flights or space station missions lasting more than 60 days, a substantial weight savings can be realized by carrying a small amount of elemental iodine to regenerate the new system where we previously had to fly a complete replacement unit," Saner said.

"I believe there is a valuable commercial application for this unit, particularly in developing nations where the need for microbial control of water supplies is very

-more-

critical," Sauer said. Microbial contamination is caused by micro-organisms, especially pathogenic bacterium, that can infiltrate a water supply. "This is an effective alternative that doesn't have the drawbacks of the hazardous gases affiliated with purification systems that use chlorine or other traditional methods. This is a totally different technology than that used in chlorination systems," Sauer said.

Using elemental iodine to regenerate a resin bed eliminates the dangers common in the use of chlorine including overtreating the water supply and the storage and use of the hazardous chlorine gas. The system is scalable up to municipal water treatment size, creating commercial applications that also could be of benefit during times of flood or other natural disasters.

"A resin bed containing iodine can be stored safely for a long time," Sauer said. That extended shelf-life has the benefit of making the resin bed available on short notice in emergency situations, such as flooding or other natural disasters that impact the potable water supply.

According to Sauer, the development of this unit builds on earlier research by Dr. Jack Lambert and Dr. Louis Fina of Kansas State University and a number of technologies developed over the past 20 years.

Sauer is the Deputy Chief of the Biomedical Operations and Research Branch at the Johnson Space Center. A 27-year veteran of the center, his primary efforts have been directed at the biomedical aspects of manned spaceflight. He also serves as NASA's expert for establishing spaceflight water potability and monitoring standards, as well as directing the sampling and analysis of Space Shuttle potable water samples.

He graduated from the University of Notre Dame with a bachelor of science degree in 1962 and received a master of science degree from the University of California in 1974. He is married to the former Chris Sherman.

-end-

NASA News

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Barbara Schwartz
RELEASE: 94-022

For Release:
March 7, 1994

25TH ANNUAL LUNAR AND PLANETARY SCIENCE CONFERENCE TO BE HELD MARCH 14-18

Scientists from around the world will meet in Houston at the 25th Annual Lunar and Planetary Science Conference March 14-18 at the Gilruth Center, Johnson Space Center, to present the latest research findings about the planets and the cosmos.

A presentation entitled "Things That Go Bump in the Night: Shoemaker-Levy 9," will provide the latest information on the comet's collision course with Jupiter. Fragments of the shattered comet are expected to strike Jupiter in July. Also, video of the Moon's surface from the recently launched Clementine spacecraft will be shown in the Gilruth Center during the conference.

"At this year's conference we will celebrate the 25th anniversary of the first manned visit to the Moon," said Dr. Douglas P. Blanchard, Chief of JSC's Solar System Exploration Division. "While we will discuss ongoing lunar and planetary research, we will emphasize what we are learning about the universe now and how that influences future exploration. In the quarter of a century that this conference has been held, the amount of information exchanged and the relationships formed have been invaluable to the scientific community."

A conference agenda is attached.

AGENDA
25TH ANNUAL LUNAR AND PLANETARY SCIEINCE CONFERENCE

All sessions held at the Gilruth Center in the following rooms except where noted:

Room A: Room 104
Room B: The old gym.
Room C: The new gym.
Room D: Room 206 (upstairs)

Monday, March 14

8:30 a.m.	Room A	Venus Gravity and Interior Processes
	Room B	Origins of Planetary Systems: Session dedicated to the memory of Hans Suess
	Room C	Asteroidal and Planetary Basalts
1:30 p.m.	Room A	Venus Tectonism
	Room B	Lunar Geology and Global Evolution
	Room C	Refractory Inclusions
5 p.m.	Room A	Reception to honor the 1993 Stephen E. Dwornik Student Paper Award and the 1993 G. K. Gilbert Award Winner

Tuesday, March 15

8:30 a.m.	Room A	Planetary Volcanism: Venus and Earth
	Room B	Outer Solar System
	Room C	Isotope Anomalies, Nebular Processes, and Timescales
	Room D	Lunar Regolith: Processes and Products
1:30 p.m.	Room A	Venus Surface Properties and Resurfacing
	Room B	Things That Go Bump in the Night: Shoemaker-Levy 9
	Room C	Interstellar Grains and Astrophysical Settings
	Room D	Moon Rocks, Mostly Highland
3:30	Room B	Metal-Rich Meteorites
6:30	LPI	Poster Session I--Education Session Displays--

Wednesday, March 16

8:30 a.m.	Room A	Interplanetary Dust Particles
	Room B	Lunar Remote Sensing and Remote Sensing Techniques
	Room C	Ordinary Chondrites
1:30 p.m.	Room A	Martian Geomorphology
	Room B	Planetary Differentiation and Processes: Session dedicated to the memory of Ted Ringwood
	Room C	Special Session "Mercury: Ground-based and Space-based Exploration"
	Room D	Solar and Cosmogenic Components

Thursday, March 17

8:30 a.m.	Room A	Mars Remote Sensing and Surface Composition: Session dedicated to the memory of Roger G. Burns
	Room B	Terrestrial Impacts: Holes from Beyond
	Room C	Chondrules
	Room D	Dimensionally Challenged Objects: Gaspra, Ida, Comets, and IDPs
1:30 p.m.	Room A	Asteroids
	Room B	Impact Experimentation and Theory: Guns and Coders
	Room C	Primitive and Differentiated Achondrites
	Room D	Mars and Venus: Atmospheres, Dust, and Weathering
6:30 p.m.	LPI	Poster Session II--Education Session Displays--Integrating Planetary Science Into the Curriculum

Friday, March 18

8:30 a.m.	Room A	Martian Geophysics and Impact Processes
	Room B	Impact Materials: Shock Geotherapy
	Room C	Carbonaceous Chondrites, Enstatite Chondrites, and Kaidun

NASA News

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For Release:
March 10, 1994

RELEASE: 94-40

REFLIGHT OF TETHERED SATELLITE SYSTEM CONFIRMED

NASA Administrator Daniel Goldin and Italian Space Agency (ASI) Special Administrator Professor Giampietro Puppi have confirmed the reflight of the Tethered Satellite System (TSS). Target date for the mission is February 1996.

NASA and ASI long have planned this reflight but a formal commitment awaited U.S. congressional approval for NASA to spend FY 1994 funds. TSS originally was flown on the Space Shuttle STS-46 mission launched July 1992. TSS deployment was curtailed when mechanical interference in the deployer reel assembly prevented full deployment of the satellite. The TSS reflight will focus on science objectives not accomplished on the STS-46 mission.

NASA and ASI completed a study last year of the jointly-developed TSS and confirmed their judgement of its usefulness as a unique Shuttle-based experiment carrier. The TSS could place a satellite into the Earth atmospheric regions that are difficult to study. These regions lie above the range of high altitude balloon flights and below the altitude of free-flying science satellites.

The mission announced today is expected to complete demonstration of the technology of deploying satellites on long, gravity-gradient stabilized tethers in space and through scientific investigations, to verify the value of such systems for scientific and technological research.

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TSS consists of a deployer system, 13.47 miles (21.68 km) of tether and a 1,139 pound (517 kg), 5 foot (0.15 m) in diameter spherical satellite. The satellite, developed by the Italian Space Agency, contains payload, service and propulsion modules. The payload module will carry several science instruments while the service module houses power, data handling, telemetry and navigation systems. Other TSS-1 instruments -- such as the Italy-developed core equipment -- are mounted in the Space Shuttle orbiter's cargo bay.

- end -

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For Release:

Kyle Herring
RELEASE: 94-023

March 17, 1994

PAYLOAD COMMANDER, MISSION SPECIALIST NAMED TO STS-73

Dr. Kathryn C. Thornton, Ph.D., has been named Payload Commander of the second United States Microgravity Laboratory mission (USML-2) scheduled for launch in the fall of 1995 aboard Space Shuttle Columbia. Also chosen as a mission specialist was Dr. Catherine G. "Cady" Coleman, Ph.D. (Captain, USAF).

STS-73, presently scheduled to last 16 days, will become the longest mission in Space Shuttle program history and is designed to continue laying the foundation for microgravity research conducted over extended durations in space.

USML-2 follows the first microgravity laboratory mission, STS-50, flown in June and July 1992. The mission will continue the series of Shuttle flights dedicated to studying microgravity materials processing technology through research sponsored by government, industry and academia. The mission will focus on materials science, biotechnology, combustion science, the physics of fluids and many other scientific experiments to be housed in the pressurized Spacelab module.

For Thornton, STS-73 will be her fourth Shuttle flight. She first flew aboard Discovery on a Department of Defense mission (STS-33) in November 1989. Her second flight was in May 1992 on the maiden voyage of Endeavour (STS-49) to rescue and repair the Intelsat spacecraft and to examine assembly techniques for large space structures such as the international space station. On that flight, Thornton evaluated assembly techniques during 1 of 4 spacewalks. Thornton's most recent flight in December 1993 was aboard Endeavour as a member of the crew sent to carry out the first servicing of the Hubble Space Telescope (STS-61). On that flight, she was 1 of 4 astronauts that conducted a record 5 spacewalks.

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Coleman will be making her first flight on the Space Shuttle. She was selected to be an astronaut in 1992. Coleman graduated from W. T. Woodson High School in Fairfax, Va., in 1978. She earned a bachelor of science degree in chemistry from the Massachusetts Institute of Technology in 1983 and a doctorate in polymer science and engineering from the University of Massachusetts in 1991.

Since completion of astronaut training, Coleman has supported the Astronaut Office Mission Support Branch, assisting with flight software verification in the Shuttle Avionics Integration Laboratory.

-end-

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For Release:
March 17, 1994

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RELEASE: 94-45

SPACE STATION PROGRAM MARKS MAJOR MILESTONE

The International Space Station Program will cross a major milestone next week when program managers from NASA, the international partners and the contractor community meet to review and evaluate the design status of the orbiting laboratory.

At the System Design Review (SDR), set for March 23 and 24 at the Johnson Space Center (JSC), Houston, program managers will validate overall technical requirements for the space station and take a preliminary look at how the requirements will be accomplished.

"This is where we move from concepts to hardware implementation," said Randy Brinkley, Space Station Program Manager. "This is by far the most important technical milestone in the program since last year's redesign of the station. The SDR will lock in the key technical elements of the system as well as the schedule and cost."

The SDR will include managers from NASA; the Canadian Space Agency; the European Space Agency (ESA); the Italian Space Agency (Agenzia Spaziale Italiana); the Japanese Space Agency (NASDA); the Russian Space Agency; the prime contractor Boeing; and Tier I subcontractors Rocketdyne and McDonnell Douglas.

The SDR will establish the technical baseline of the entire program and is an extension of the SDRprocess conducted in December. The SDR documentation has been reviewed concurrently by program analysis and integration teams and integrated

-more-

product teams. NASA, the international partners, Boeing and the Tier I subcontractors all have participants on the teams developing the SDR documents.

The 2-day meeting is intended to be an executive summary and overview of the SDR process results. Participants will review the operation and utilization concept, the baseline assembly sequence and assembly operations. For the international space station, this includes the specifications for the U.S. on-orbit components, U.S. ground components, ESA's Columbus Laboratory Module and the Japanese Experiment Module. Participants also will look at the basic design of the station's core systems including electrical power; thermal control; life support; guidance, navigation and control; propulsion; command and data handling; communications and tracking; and extravehicular activities. Risk and affordability also will be assessed. The analysis at SDR will demonstrate the feasibility of the requirements and establish the physical and functional interfaces between system elements including software and hardware.

The overall objective of the meeting is to reach a consensus among program managers on the technical validity, design and completeness for the space station system specifications; the operations concept; requirements for interfaces with the Space Shuttle and Russian launch vehicles; and to refine cost and program schedules. This is an important checkpoint for the program, Brinkley said. "This review gives us an opportunity to assess the developing design to ensure that it meets program objectives and requirements."

Over the next year, the space station team will refine the design to more detailed levels and finalize it at the Critical Design Review currently scheduled for April 1995.

"Since last year's redesign of the space station, NASA has made significant progress with the international partners and contractor team to provide -- on schedule and within budget -- a world-class, space-based research facility," Brinkley said.

"By using about 75 percent of the hardware planned for Space Station Freedom, NASA has been able to maintain its investment to date while redesigning the system to be less expensive and more capable," he said. "The international community of researchers, scientists and industry that comprises the International Space Station users will have access to an unprecedented amount of power, volume and crew time to conduct investigations in the microgravity environment of space," Brinkley concluded.

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NOTE TO EDITORS: Managers from NASA, the international partners and Boeing will meet with the press at JSC to discuss the review on March 24 at 4 p.m. EST. The press conference will be carried on NASA Select TV.

NASA Select Television is carried on Spacenet 2, transponder 5, located at 69 degrees West longitude, frequency 3880.0 MHz, audio 6.8 MHz. Video of the SDR in progress and animation of the current design will be broadcast on NASA Select immediately following the press conference.

Photographs of the three phases of the International Space Station Program are available from JSC's Still Photo Library by calling 713/483-4231. Animation of the station configuration also will be available March 23 from the Film and Video Distribution Library at 713/486-9606.

NASA News

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March 23, 1994

Franklin O'Donnell
Jet Propulsion Laboratory, Pasadena, Calif.
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RELEASE: 94-050

GALILEO DISCOVERS MOON OF ASTEROID

The first-ever photograph of a moon of an asteroid, sent to Earth by NASA's Galileo spacecraft, was released by the space agency today.

The photo of Asteroid 243 Ida and its newly discovered natural satellite was taken by Galileo as the spacecraft flew past Ida last Aug. 28. It was not transmitted to Earth until recently because the spacecraft is sending back data at a very slow rate.

According to team scientists at NASA's Jet Propulsion Laboratory (JPL), Pasadena, Calif., the image together with data from Galileo's near-infrared mapping spectrometer are the first conclusive evidence that natural satellites of asteroids exist.

The discovery gives scientists an intriguing new clue in deciphering the origins and evolution of these ancient rocky bodies, most of which orbit the sun in the main asteroid belt between Mars and Jupiter.

Even so, many pieces of information on the newly found moon -- where it came from, how it came to be orbiting Ida and the details of that orbit -- are still unclear.

"It previously was thought that natural satellites of asteroids could form, but they probably weren't common," said Dr. Torrence Johnson, Galileo Project Scientist. "Having found one fairly quickly, we can say that they're probably more common than previously thought."

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From the photo and spectrometer data, team scientists estimate that the natural satellite is about 1 mile (1.5 kilometer) across in this vie and appears to be at a distance of about 60 miles (100 kilometers), plus or minus 30 miles (50 kilometers), from Ida's center. The position will be more accurately determined as new data are analyzed. Ida itself is about 35 by 15 by 13 miles (56 by 24 by 21 kilometers) in size.

As yet they do not know the parameters of the object's orbit -- critical information that can reveal Ida's mass. Combinng these measurements of Ida's size and volume can tell scientists the asteroid's density, offering more clues as to what it is made of.

The data from Galileo's near-infrared mapping spectrometer -- which scans space objects at a variety of wavelengths to reveal their chemical compositions -- suggest that Ida's moon is made more or less from the same kind of material as Ida. Ida is an S-type asteroid, composed mostly of silicate rocks.

Scientists are certain, in any event, that the moon's surface is not composed mostly of carbonaceous material, as are the many asteroids that are termed C-type asteroids.

Further information on the object's composition will become available as color pictures and more detailed data from the spectrometer are transmitted to Earth over the next few months.

Galileo scientists believe the moon may have been created at the same time as Ida -- when an older, larger asteroid was shattered by a collision with another asteroid, giving birth to dozens of smaller asteroids.

Ida is a member of the Koronis family of asteroids, which scientists believe was created when a larger body perhaps 120 to 180 miles (200 to 300 kilometers) in diameter was smashed relatively recently -- at least considerably after the solar system formed some 4.5 billion years ago. (The family was named for Koronis, one of the asteroids that belongs to it.)

Alternatively, it is possible that Ida was hit by a smaller object even more recently, leaving a crater on the asteroid and throwing off the material that became the small moon.

"Ida's age is baffling, because the craters visible on its surface suggest that it is old, but being a part of the Koronis family suggests it is younger," said Johnson.

"In any event, we don't believe that Ida and its moon could go back to the formation of the solar system," he added. "It's generally thought that a small object like that moon could not survive this long; sooner or later it would itself be broken up in a high-speed collision with an even smaller asteroid."

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Galileo scientists also believe it is virtually impossible that the moon is a "captured object," something created completely separate from Ida that happened to wander near the asteroid and be caught by its gravitational field. According to the laws of celestial mechanics, such an event would deflect the smaller object, but would not capture it into an orbit unless a third force of some kind slowed it down.

"Once we have determined the object's orbit, we can estimate timescales and make better guesses as to where it came from," said Johnson.

Launched in October 1989, Galileo made its closest approach to Ida at a distance of 1,500 miles (2,400 kilometers) last August while flying through the asteroid belt en route to its final destination -- the giant planet Jupiter, where it will go into orbit in Dec. 1995.

Because Galileo is transmitting data back to Earth through its low-gain radio antenna, it must transmit at slow rates. One picture of Ida -- a mosaic of five separate frames -- was received shortly after the flyby, but later pictures had to wait because telecommunications conditions became unfavorable as Galileo's distance from Earth increased. In the meantime data were stored on Galileo's onboard tape recorder awaiting playback this spring.

Scientists say that the newly found moon was outside the boundaries of the picture of Ida released last September.

Ground controllers instructed Galileo to send back more portions of photos and other data beginning in February as the spacecraft's distance from Earth decreased and radio communications with the spacecraft improved.

In preparation for complete playback, they commanded the spacecraft to transmit strips of each image -- called "jail bars" by the project's engineers and scientists -- so that they could locate Ida accurately within images stored on Galileo's recorder. Later, portions of an image containing Ida could be selected for playback in entirety.

On Feb. 17 -- a day after the first of these "jail bars" was sent back from Galileo -- evidence of the natural satellite was noticed in one set of image strips by Ann Harch, a Galileo imaging team associate at JPL. It took several days to verify that what appeared to be a moon was not actually an artificial effect of some kind.
On Feb. 23, scientists examining similar preliminary data from a chemical map obtained by the near-infrared mapping spectrometer discovered an unusual object in their data. By Feb. 28, scientists from both the camera and spectrometer teams concluded that they had a confirmation.

Amateur astronomers for many years have observed the light of stars blinking off and on as objects such as asteroids pass in front of them in events called stellar occultations. Some have reported "blinkouts" that suggest that some asteroids have moons, but such reports have never been confirmed by definite second sightings. Galileo's discovery is thus the first unambiguous evidence of an asteroid moon.

Other images that may show the asteroid moon are still stored on Galileo's tape recorder and will be played back later this spring. Among them is an image that is expected to be at least three times sharper than the first image received.

The newly found moon has been provisionally designated "1993 (243) 1" -- meaning that it is the first natural satellite discovered in 1993 at Ida, which was the 243rd asteroid discovered over the past 2 centuries. The moon will be formally named later by the International Astronomical Union.

JPL manages the Galileo Project for NASA's Office of Space Science.

-end-

NOTE TO EDITORS: Black and white images are available to media from NASA's Broadcast and Imaging Branch, 202/358-1900. Photo numbers are: 94-H-140 and 94-H-141.

NASA News

National Aeronautics and
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For Release
March 24, 1994

EDITORS NOTE: N94-27

GOLDIN'S RESPONSE TO THE CBO REPORT

NASA will not back away from the Administration's balanced aeronautics and space program. Nor will we lose the courage to conduct the kind of program the American public wants -- lean, bold and visionary. Unfortunately, the Congressional Budget Office (CBO) report would sacrifice both the balance and boldness. The report takes a defeatist approach and sends a chilling message to any government agency that dares reinvent itself .... that dares give the taxpayer effectiveness, efficiency and creativity.

NASA has led the way in stepping up to the Federal budget challenge -- no agency has taken deeper percentage cuts than we have. Yet we still send men and women to live and work in space. We send spacecraft to explore the heavens. We monitor critical environmental conditions. We are building an international outpost for humans in space. And NASA's vibrant aeronautics program will take American aviation on top in an increasingly competitive global environment.

Any of the three alternatives put forth in the CBO report would destroy the essential balance between human space flight, space science and leading-edge aeronautics. And the CBO report would destroy the dream President Kennedy began more than 30 years ago. They also fail to factor in the tremendous termination and transition costs associated with shutting down a major portion of the space program, not to mention the potential for enormous economic dislocation.

NASA can accomplish bold, daring and difficult missions on a tight budget -- we proved that again with the Hubble rescue mission. We fixed the Hubble on time and under budget, and it's performing beyond our greatest expectations. As I said when the NASA budget for next year was announced: "This is it. We've cut to the bone. We cannot accept further budget cuts."

- end -

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Kelly O. Humphries
RELEASE: 94-025

For Release:
March 24, 1994

OUTREACH PROGRAM TARGETS HIGH SCHOOL STUDENTS

A group of Johnson Space Center cooperative education students will reach out to a Houston high school March 28-April 15, relating their personal experiences from school and the work place and showing the students how they can become involved in the space program of the future.

The visits are part of the Cooperative Education Program's High School Outreach Program, established in 1991 in an effort to channel high school students into science, mathematics and technology career paths.

Cooperative education students, or "co-ops," alternate between their college studies and rotations as full-time NASA employees, mixing their education with on-the-job training. Most JSC co-ops are engineering students, but some are studying business, English, science and other fields. Because of the similarity in age and status, co-ops are well-suited to bridge the gap with high school students.

In their outreach presentations, they share information on NASA's past and future and relate that to the need for scientists, engineers and mathematicians, as well as to the high school students' current and future course work.

This spring, the Outreach Program is expected to reach about 4,500 students. In past years, co-ops have made presentations to about 1,400 students at the LaPorte, Clear Creek, Dickinson and South Houston High Schools.

There will be morning and afternoon presentations at Deer Park South High School March 28-30, April 5-8 and April 12-15, and morning presentations March 31. News media representatives interested in covering a presentation are invited to contact co-op Tara Patterson at 244-5836 at least a day in advance for information on the particular classroom that will host that presentation.

end

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March 24, 1994

Kari Fluegel
Johnson Space Center, Houston
(Phone: 713/483-5111)

RELEASE: 94-53

SPACE STATION SYSTEM DESIGN REVIEW COMPLETED

Plans for the International Space Station are maturing rapidly and the orbiting research facility is on track for assembly to begin in 1997 as scheduled, program managers said today after completion of the system design review.

"This was a major milestone for the International Space Station," said Space Station Director Wilbur Trafton. "The space station team has just conducted a comprehensive review of the requirements, configuration and the maturity of the station's technical definition. We now have a solid baseline for the program. We have an executable schedule with costs that maintain acceptable reserves within our budget cap."

A major milestone in the space station program, the system design review (SDR), included participants from NASA, the Canadian Space Agency, the European Space Agency, the Italian Space Agency, the Japanese Space Agency, the Russian Space Agency, the prime contractor Boeing and Tier I subcontractors Rocketdyne and McDonnell Douglas.

Managers reviewed and evaluated the overall configuration, technical requirements and detailed specifications for the space station during the meeting which concluded Wednesday at the Johnson Space Center.

"I'm extremely pleased with the results of this program review," said Program Manager Randy Brinkley. "The results of the SDR demonstrate that the International Space Station has a high degree of design maturity. This program is right on track to providing the science community with a world class orbiting laboratory."

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The SDR resulted in a consensus among program managers on the technical validity of the design and completeness of the station's system specifications, the operations concept and requirements for interfaces with the Space Shuttle and Russian launch vehicles. Refinements to cost and program schedules also were presented.

Baseline Configuration

Using approximately 75 percent of Space Station Freedom hardware, the completed International Space Station consists of U.S. elements including the integrated truss, habitation module and laboratory module; the Russian science power platform, service module and functional cargo block vehicle (FGB); the ESA laboratory module; Japanese experiment module and exposed facility and the Canadian remote manipulator system.

The station will operate at an altitude of approximately 240 n.m. (444 km) and will orbit in a 51.6 degree inclination which will offer better Earth observation opportunities. The International Space Station increases crew size from four to six. It will have 33 standard user racks for science operations.

Schedule

The planned assembly of the station will begin with launch of the Russian "FGB" vehicle in November 1997. A docking compartment will be added before the first American launch in December 1997. The Russian service module will be added to the station in January 1998 followed by the universal docking module and the science power platform. The U.S. laboratory module will be launched on the third U.S. flight in May 1998 and will signal the beginning of human-tended science operations.

The Canadian-built robotic arm will be launched on the next flight in June 1998 and the addition of the Soyuz transfer vehicle in August 1998 will provide capabilities for extended on-orbit operations. The Japanese experiment module will be launched in early 2000 and the ESA laboratory module will be added in June 2001. Assembly will be complete in June 2002. In total, the sequence provides for 13 Russian assembly flights and 16 U.S. assembly flights. Use of the Ariane V launcher to lift the European module to the station also has been added to the technical baseline.

Cost

The U.S. contribution to the station is estimated to cost $17.4 billion from Fiscal Year 1994 until assembly is complete in 2002. This includes annual budget appropriations of about $2.1 billion and consists of development, vehicle and ground operations costs and utilization support during the assembly period.

- more -

International Partner Status

Canada completed the critical design review for the Space Station remote manipulator system in 1993. Changes in the subsystem design requirement and assembly sequence currently are being addressed.

The critical design review for the Japanese experiment module is scheduled for 1996. Currently all development activities are on track for launch in early 2000. The European attached pressurized module (APM) preliminary design review is scheduled for 1996 with the critical design review scheduled for 1998. Program managers also are investigating the feasibility of launching the APM on an Ariane V booster as a baseline.

The inter-government agreements for the station currently are being amended to include Russia as a full partner. The memorandum of understanding and joint management plan with Russia will be completed in mid-1994 and negotiation of a fixed price contract is currently in work.

Extravehicular Activities

The amount of extravehicular activity (EVA) in the critical path for station assembly has been significantly reduced. EVA crew hours for maintenance during the station's 10-year perational lifetime also have been significantly reduced.

Ground Control

The ground system for the International Space Station builds on the interfaces for the Shuttle and Freedom programs. The design is being optimized to reduce developmental and recurring costs. All drivers for the ground control systems are well understood and the final specification will be baselined for May.

Station systems

All station systems have a high degree of design maturity. For example, the guidance, navigation and control system design is 97 percent complete. The communications and tracking system design is very mature and analysis and testing to date show that all station requirements will be met. The critical design reviews for the audio, video, S-band and Ku-band systems have been completed with more than 90 percent of the flight material on order or available inhouse. The thermal control system has been significantly simplified. The external active thermal control system has the most significant changes but still retains 40-50 percent of the previous hardware designs.

- more -

The internal active thermal control system retains 80-90 percent and the photovoltaic active thermal control system retains 100 percent of the existing hardware design. Also, analysis shows that designs for the life support systems also are progressing well with development programs completed for all major subsystems. A number of key environmental system tests have been completed using prototype hardware and 90 percent of the hardware has passed a critical design review.

Transition Activities

Since the transition activities began last fall, 1,050 open issues from the Freedom program have been resolved. Another 471 new program issues also have been closed during that time. At the close of the SDR, only 17 issues remain open. Those issues include providing for additional on-orbit payload storage, addressing Japanese experiment module and ESA module ventilation noise levels and determining the location and specifications for an optical quality window in the station design.

"We've closed nearly 100 issues for every technical issue still to be resolved and for the few remaining open items, each has a plan on how to close it and a timetable within which it will be closed," Trafton said. "The team is tackling the tough issues, making decisions and moving ahead with a space station that can be built on schedule and at the cost which the Administration and the Congress have established for this program."

With the completion of the SDR, the space station team will refine the design to more detailed levels. In April 1995, the program will conduct the critical design review for the station, a milestone that means the detailed engineering design essentially will be complete.

"We have come a long way in a short amount of time, and that is due to an unbelievable level of professional dedication and hard work by all the program team members," Brinkley said. "Because of these people, the International Space Station will be on orbit and performing valuable science as the nation and the world enters the next century."

- end -

NASA News

National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release:
March 28, 1994

Ed Campion
Headquarters, Washington, D.C.
(Phone: 202/358-1778)

NOTE TO EDITORS/NEWS DIRECTORS:

STS-59 NASA NEWSROOM HOURS AND PROCEDURES FOR AFTER-HOURS NEWS CONFERENCE PARTICIPATION

During Shuttle Mission STS-59, some NASA newsrooms supporting the flight will have extended hours of operation. However, staffing and budget constraints will force some NASA newsrooms to be closed in the evenings and on weekends.

To permit media to ask questions in daily mission press briefings, the following procedures are to be used when a newsroom is closed and it is not possible for the media to ask questions directly of press conference briefers.

Media should write down their name, affiliation and question(s) and facsimile the question(s) to the newsroom at the NASA Center originating the briefing at least 1/2 hour prior to the start of the news conference. Facsimile numbers are listed in this release. The question(s) will be given to the appropriate briefer who will read the question over NASA select and answer it or refer it to the appropriate expert. Newsroom personnel WILL NOT forward verbal question to the briefing participants.

In an effort to facilitate the flow of communications, listed below are the times each newsroom will be open along with contact phone numbers.

- more -

STS-59 NEWSROOM OPERATIONS
(Based on 4/7/94 launch)

Kennedy Space Center, Fla.

Operating Hours	
L-3	6:30 a.m. - 4:30 p.m. EDT
L-2	7:00 a.m. - 4:30 p.m. EDT
L-1	7:00 a.m. - EDT
Launch day	- 6:00 p.m. EDT
On-Orbit (weekdays)	8:00 a.m. - 4:30 p.m. EDT
On-Orbit (weekends)	Closed*
Landing day	8:00 a.m. - 7:00 p.m. EDT

* Note: Should the STS-59 in-flight crew press conference take place on a weekend, the KSC newsroom will be open to support news media wishing to cover the event. Please contact KSC Public Affairs for the exact hours of operation.

Phone Numbers			
Newsroom:	407/867-2468	After Hours:	
Facsimile:	407/867-2692	Dick Young	904/423-180
Code-A-Phone:	407/867-2525	Lisa Malone	407/452-4677

****

Johnson Space Center, Houston

Operating Hours	
L-2	8:00 a.m. - 5:00 p.m. CDT
L-1	8:00 a.m. - 5:00 p.m. CDT
Launch day	5:00 a.m. - 5:00 p.m. CDT
On-Orbit (weekdays)	8:00 a.m. - 5:00 p.m. CDT
On-Orbit (weekends)	9:00 a.m. - 2:00 p.m. CDT
Landing day	8:00 a.m. - 5:00 p.m. CDT

Phone Numbers			
Newsroom:	713/483-5111	After Hours:	
Facsimile:	713/483-2000	Jeff Carr	713/474-3166
Code-A-Phone:	713/483-8600	Brian Welch	713/480-5194

* *

Marshall Space Flight Center, Huntsville, Ala.

Operating Hours	
L-2	8:00 a.m. - 5:00 p.m. CDT
L-1	8:00 a.m. - 5:00 p.m. CDT
Launch day	6:00 a.m. - 5:00 p.m. CDT
On-Orbit (weekdays)	8:00 a.m. - 5:00 p.m. CDT
On-Orbit (weekends)	Closed
Landing day	8:00 a.m. - 5:00 p.m. CDT

Phone Numbers		
Newsroom:	205/544-0034	After Hours:
Facsimile:	205/544-5852	Dom Amatore - 205/461-7833
Code-A-Phone:	205/544-6397	June Malone - 205/881-3527

****

Jet Propulsion Laboratory, Pasadena, Calif

Operating Hours	
L-2	7:00 a.m. - 5:00 p.m. PDT
L-1	7:00 a.m. - 5:00 p.m. PDT
Launch day	7:00 a.m. - 5:00 p.m. PDT
On-Orbit (weekdays)	7:00 a.m. - 5:00 p.m. PDT
On-Orbit (weekends)	Closed
Landing day	7:00 a.m. - 5:00 p.m. PDT

Phone Numbers		After Hours:
Newsroom:	818/354-5011	Frank O'Donnell -- 213/255-7868
Facsimile:	818/354-4537	Edward McNevin -- 818/398-7460

****

Dryden Flight Research Center, Edwards, Calif.

Operating Hours	
L-2	7:30 a.m. - 4:00 p.m. PDT
L-1	7:30 a.m. - 4:00 p.m. PDT
Launch day	7:30 a.m. - 4:00 p.m. PDT
On-Orbit (weekdays)	7:30 a.m. - 4:00 p.m. PDT
On-Orbit (weekends)	Closed
Landing day	Landing - 2 hours - Landing + 2 hours PDT

- more -

Phone Numbers

Newsroom:	805/258-3449	After Hours:	
Facsimile:	805/258-3566	Nancy Lovato	805/948-2957
Code-A-Phone:	805/258-2564	Don Haley	805/943-5817

- end -

NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
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James Hartsfield
RELEASE: 94-026

For Release:
March 29, 1994

FLIGHT CONTROL OF STS-59

Flight control for STS-59, the sixth flight of Endeavour, will follow the procedures and traditions common to U.S. manned space flights since 1965, when the Mission Control Center was first used.

The responsibility for Shuttle operations will revert to the Mission Control Center (MCC), Houston, once Endeavour's two solid rocket boosters ignite. Mission support in the MCC will begin five hours prior to launch and continue through landing.

The primary objective of STS-59 is the around-the-clock operation of the first Space Radar Laboratory (SRL-1).

Orbiter operations will be conducted from Flight Control Room One (FCR-1) on the second floor of the MCC, located in Bldg. 30 at the Johnson Space Center. Voice communications with the orbiter will be as standard from the MCC using the call signs "Houston" and "Endeavour." The teams of MCC flight controllers will alternate shifts in the control center and in nearby analysis and support facilities. The handover between each team takes about an hour and allows each flight controller to brief his or her replacement on developments during the previous two shifts.

The flight control teams for this mission will be referred to as the Ascent/Entry Team, the Orbit 1 Team, Orbit 2 Team, and the Planning, or Orbit 3 Team. The Ascent/Entry Teams and the Orbit 1 Team will be led by Flight Director Rich Jackson. The Orbit 2 shift will be conducted by Lead STS-59 Flight Director Al Pennington. The Orbit 3 Team will be led by Flight Director Bob Castle.

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MCC POSITIONS AND CALL SIGNS FOR STS-59

The flight control positions in the MCC, and their responsibilities, are:

Flight Director (FLIGHT)

Has overall responsibility for the conduct of the mission.

Spacecraft Communicator (CAPCOM)

By tradition an astronaut; responsible for all voice contact with the flight crew.

Flight Activities Officer (FAO)

Responsible for procedures and crew timelines; provides expertise on flight documentation and checklists; prepares messages and maintains all teleprinter and/or Text and Graphics System traffic to the vehicle.

Integrated Communications Officer (INCO)

Responsible for all Orbiter data, voice and video communications systems; monitors the telemetry link between the vehicle and the ground; oversees the uplink command and control processes.

Flight Dynamics Officer (FDO)

Responsible for monitoring vehicle performance during the powered flight phase and assessing abort modes; calculating orbital maneuvers and resulting trajectories; and monitoring vehicle flight profile and energy levels during reentry.

Trajectory Officer (TRAJECTORY)

Also known as "TRAJ," this operator aids the FDO during dynamic flight phases and is responsible for maintaining the trajectory processors in the MCC and for trajectory inputs made to the Mission Operations Computer.

Guidance, Navigation & Control Systems Engineer (GNC)

Responsible for all inertial navigational systems hardware such as star trackers, radar altimeters and the inertial measurement units; monitors radio navigation and digital autopilot hardware systems.

Guidance & Procedures Officer (GPO)

Responsible for the onboard navigation software and for maintenance of the Orbiter's navigation state, known as the state vector. Also responsible for monitoring crew vehicle control during ascent, entry, or rendezvous.

Rendezvous Guidance and Procedures Officer (RENDEZVOUS)

The RENDEZVOUS GPO is specialist who monitors onboard navigation of the Orbiter during rendezvous and proximity operations.

Environmental Engineer & Consumables Manager (EECOM)

Responsible for all life support systems, cabin pressure, thermal control and supply and waste water management; manages consumables such as oxygen and hydrogen.

Electrical Generation and Illumination Officer (EGIL)

Responsible for power management, fuel cell operation, vehicle lighting and the master caution and warning system.

Payloads Officer (PAYLOADS)

Coordinates all payload activities; serves as principal interface with remote payload operations facilities.

Data Processing Systems Engineer (DPS)

Responsible for all onboard mass memory and data processing hardware; monitors primary and backup flight software systems; manages operating routines and multi-computer configurations.

Propulsion Engineer (PROP)

Manages the reaction control and orbital maneuvering thrusters during all phases of flight; monitors fuel usage and storage tank status; calculates optimal sequences for thruster firings.

Booster Systems Engineer (BOOSTER)

Monitors main engine and solid rocket booster performance during ascent phase.

Ground Controller (GC)

Coordinates operation of ground stations and other elements of worldwide space tracking and data network; responsible for MCC computer support and displays.

Maintenance, Mechanical, Arm & Crew Systems (MMACS)

Formerly known as RMU; responsible for remote manipulator system; monitors auxilliary power units and hydraulic systems; manages payload bay and vent door operations.

Extravehicular Activities (EVA)

A specialist responsible for monitoring and coordinating preparations for and execution of space walks. Responsibilities include monitoring suit and EVA hardware performance when applicable.

Payload Deployment & Retrieval Systems (PDRS)

A specialist responsible for monitoring and coordinating the operation of the remote manipulator system when it is carried aboard the orbiter.

Flight Surgeon (SURGEON)

Monitors health of flight crew; provides procedures and guidance on all health-related matters.

Public Affairs Officer (PAO)

Provides real-time explanation of mission events during all phases of flight.

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STS-59 FLIGHT CONTROL TEAM STAFFING

POSITION	ASCENT/ENTRY	ORBIT 1	ORBIT 2	PLANNING-ORBIT 3
FLIGHT	Rich Jackson	Rich Jackson	Al Pennington	Bob Castle
CAPCOM	Ken Cockrell	Greg Harbaugh	Nancy Sherlock	Bill McArthur
PAO	James Hartsfield (A) Brian Welch (E)	Kyle Herring	Kelly Humphries	Billie Deason
FAO	John Curry	John Curry	Ann Bowersox	Diane Hord
INCO	J.E. Conner	J.E. Conner	Harry Black	Joseph Fanelli
FDO	Bruce Hilty (A) Carson Sparks (E)	Lisa Shore	Roger Simpson	Steve Stich
TRAJ	Doug Rask (A) Lisa Shore (E)	Roger Balettie	Phillip Burley	Dan Adamo
GPO	Ken Patterson (A) Glenn Pogue (E)	n/a	n/a	n/a
GNC	Stanley Schaefer	Stanley Schaefer	Bradley Schoenbauer	Ken Bain

EECOM	Quinn Carelock	Quinn Carelock	Kathy Messersmith	Jimmy Spivey
EGIL	Ray Miessler	Ray Miessler	David Randall	Larry Minter
PAYLOADS	Jeff Hanley	Jeff Hanley	Annette Hasbrook	J. Haensley
DPS	Gary Sham	Gary Sham	James Hill	Clyde Sherman
PROP	Matt Barry	Matt Barryi	Thomas Lazo	Bill Powers
BOOSTER	Teri Stowe	n/a	n/a	John Calhoun
GC	John Wells Lynn Vernon	Melissa Blizzard Al Davis	Henry Allen Bob Reynolds	Dennis Williams Mike Marsh
MMACS	Robert Doremus	Robert Doremus	Alan Simon	David Paternostro
EVA	n/a	n/a	n/a	n/a
PDRS	n/a	n/a	n/a	n/a

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NASA News

National Aeronautics and
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For Release:

Charles Redmond
Headquarters, Washington, D.C.
(Phone: 202/358-1757)

March 30, 1994
Embargoed until 1 p.m. EST

Jane Hutchison
Ames Research Center, Calif.
(Phone: 415/604-4968)

RELEASE: 94-054

IMPROVED SHUTTLE TILE TO FLY ON STS-59

A new thermal protection tile developed at NASA's Ames Research Center, Mountain View, Calif., for the Space Shuttle may prove more efficient and less costly than tiles currently being used.

The new tile is known as Toughened Uni-Piece Fibrous Insulation (TUFI). A low-density composite thermal insulation, it will undergo its first flight test on next month's STS-59 mission. Several TUFI tiles have been placed on the Space Shuttle Endeavour's base heat shield, between the 3 main engines. NASA and Rockwell International technicians will look at how well TUFIs resist impact damage. If all goes as planned, there will be "significantly less" damage, Dr. Daniel Leiser of Ames' Thermal Protection Materials Branch said. TUFI is an advanced version of the material that protects the Space Shuttle from the intense heat that builds up as the Shuttle orbiter re-enters Earth's atmosphere.

"TUFI has several times the damage resistance of the standard system," said Leiser. "Based on successful flight tests, the use of TUFI may lead to a significant reduction in the labor costs of refurbishment."

Leiser said NASA officials are looking for a tile material that "can reduce the repair time required between flights." TUFI represents "quite an improvement" over the current thermal protection tiles, he said.

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TUFI is the first of a new type of composites known as "functional gradient materials." In these composites, the density of the material varies from high at the outer surfaces to low in the interior insulation. It "represents a whole different way of making these materials," Leiser said.

The current tiles are a rigid glass fiber composite and are about 93 percent air, with a thin glass coating that sits on top. The reaction-cured glass (RCG) coating is physically much like window glass and is only about 12/1000ths of an inch thick.

"The problem with an RCG-coated tile is that the coating gets little support from the underlying tile," Leiser said. "So when it gets hit with a rock or something, it cracks or chips."

Unlike RCG, TUFI permeates the pores nearer the surface of the insulation material. This supports and reinforces the outer surface, which makes the surface material less subject to impact damage. The outside has a relatively high density, with an increasingly lower density within the insulation.

Since TUFI is porous, the pores actually stop cracks from spreading. When an RCG-coated tile is hit, a crack spreads from the impact site much like what happens to window glass. If a TUFI-coated tile is hit, however, the damage is much more limited. The result is a small dent where the tile was hit. Since the damage is limited, the tiles are easier to patch.

TUFI has been certified for 6 Shuttle flights, on all 4 Orbiters. "I'm convinced it's going to work very well," Leiser said. "We've got a lot of data that says this material will work extremely well."

If the tests are successful, Leiser said TUFI may be used to replace tiles in specific, limited areas of the orbiter susceptible to significant impact damage. These might include the base heat shield between the engines, near the landing gear doors and near the thrusters used for orbital maneuvering.

Ames' thermal protection team also has developed several other improved thermal protection materials for the Space Shuttle. Among them is the flexible ceramic thermal protection "quilt" that covers the top of the Shuttle.

- end -

NASA News

National Aeronautics and
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For Release:

Michael Braukus
Headquarters, Washington, D.C.
(Phone: 202/358-1979)

March 31, 1994

Jane Hutchison
Ames Research Center, Mountain View, Calif.
(Phone: 415/604-4968)

RELEASE: 94-055

NASA AND NIH READY FOR FIRST JOINT SCIENCE FLIGHT

The first cooperative space flight research initiative between NASA and the National Institutes of Health (NIH) will help scientists better understand the effects of microgravity on growth of human bone and muscle cells during space flight and also, may increase understanding of changes in muscle and bone on Earth after severe injury, certain degenerative diseases or prolonged bedrest. This space research will be conducted on April's Space Shuttle mission.

The cell biology experiments will use a special cell culture system designed and developed by the Walter Reed Army Institute of Research, Washington, D.C. The system, known as Space Tissue Loss (STL), will examine the effects of microgravity on muscle and bone cells.

In weightlessness, virtually every human physiological system undergoes some form of adaptation. On this flight, scientists will examine how exposure to microgravity changes the size, shape, components and maturation of bone and muscle cells by analyzing the cells after return to Earth. They will study bone cells from rats and chicks and muscle cells from rats.

"We may gain important insights into the basic biology of how muscle and bone cells respond to changes in gravitational force," said Joan Vernikos, Director of NASA's Life and Biomedical Sciences and Applications Division, Washington, D.C. "We also may be better able to answer the more immediate question for NASA, how to reduce muscle and

- more -

bone loss during space flight."

Previous flights of muscle and bone cells using this cell culture system suggested that bone and muscle cells may mature differently in space than on Earth. Significant changes at the cellular level during space flight could affect the strength of bone and muscle.

Preliminary data suggest that muscle cells grown in space lose their ability to convert from muscle cells to muscle fibers following flight. In addition, the matrix produced by bone cells in flight may not mineralize the same way as bone cells on Earth. Bone matrix is the organic structure onto which minerals are deposited.

Dr. Ruth Globus of the Veterans Administration Medical Center and the University of California, both in San Francisco, will study the response of rat bone cells during the flight. She will examine the ability of bone cells to mature and produce materials required for mineralization of the skeleton. Her co-investigator is Dr. Stephen Doty of the Hospital for Special Surgery in New York City.

Dr. David Kulesh of the Armed Forces Institute of Pathology (AFIP), Washington, D.C., will study muscle cell cultures. His co-investigators are Dr. George Kearney, Maj. Loraine Anderson and Dr. William Mehm, all of AFIP. They will examine samples of space-flown muscle cells to learn if they mature and form muscle fibers after return to Earth. In addition, they hope to find out how information in the DNA is expressed in the space-flown cells.

Dr. William Landis and co-investigator Dr. Louis Gerstenfeld will study the response of chick bone cells to space flight. Both are from the Laboratory for the Study of Skeletal Disorders at the ChildrenUs Hospital, Boston, and the Department of Orthopedic Surgery at Harvard Medical School. Analysis of nutrient solution collected at two points during flight will allow the scientists to examine rates of cell growth during exposure to space flight.

They also will compare protein production by bone cells exposed to space flight with those on Earth. These proteins and the way they weave the bone matrix are important in production of new bone. In addition, they will investigate the mineral incorporated into the matrix during the flight using analytical techniques such as electron microscopy.

NASA has signed agreements with eight of NIH's institutes to expand biomedical cooperation between the two agencies. The cell experiments on this flight are the result of an agreement between NASA and the National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS). As part of the NIAMS agreement, NASA agreed to fly a series of experiments on three Space Shuttle flights that will focus on the changes in bone and muscle cells during space flight.

- end -

Ed Campion
Headquarters, Washington, D.C.
(Phone: 202-358-1780)

April 4, 1994

James Hartsfield
Johnson Space Center
(Phone: 713-483-5111)

RELEASE: 94-028

LAUNCH ADVISORY -- STS-59 LAUNCH RESCHEDULED TO APRIL 8TH

Space Shuttle managers today decided to delay the launch of STS-59 to allow additional inspections of metallic vanes in the high pressure oxidizer preburner pump volute housings of Endeavour's main engines.

The inspections are expected to add at least one day to the launch preparations, and managers will review the findings once the inspections are completed. A launch window for STS-59 on April 8th opens at 8:06 a.m. EDT.

The inspections are being performed after similiar main engine parts were found to be out of specification by about 30 thousandths of an inch regarding measurements of the radius of the metallic vanes. The vanes direct the flow of liquid oxygen as it is fed into the high pressure oxidizer turbopumps on the engines. The radius is a measure of the curvature of the metal, and a sharper curvature could reduce the tolerance of the metal to fatigue cracking.

The out-of-specification measurements were found on a housing undergoing proof testing at Rockwell's Rocketdyne Division, the main engine manufacturer. Some other preburner housings were then found to have similiar curvatures.

However, in more than 8,330 minutes of Space Shuttle Main Engine operations to date, no preburner housings have been found to have fatigue cracks. In addition, cracks have never been found following proof testing of the housings, tests that subject the parts to much more severe pressures than experienced during flight. Due to the out-of-specification measurements, managers decided an inspection of the preburner housings installed in Endeavour's main engines to determine their radius would be prudent.

-end-

NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release:

Debra J. Rahn
Headquarters, Washington, D.C.
(Phone: 202/358-1639)

April 5, 1994

EDITORS NOTE: N94-028

INTERNATIONAL SPACE STATION ACCOMPLISHMENTS AND RUSSIAN PARTICIPATION DISCUSSED

The heads of the space agencies involved in the International Space Station, the Canadian Space Agency (CSA), the European Space Agency (ESA), the National Space Development Agency of Japan (NASDA), the Russian Space Agency (RSA) and the National Aeronautics and Space Administration (NASA) met in Washington, D.C. on April 5, 1994. The joint statement, summarizing the results of the meeting, is being issued today by all the participants.

Joint Statement -- Space Station Heads of Agencies Meeting

The heads of the space agencies involved in the International Space Station -- the Canadian Space Agency (CSA), the European Space Agency (ESA), the National Space Development Agency of Japan (NASDA), the Russian Space Agency (RSA) and the U.S. National Aeronautics and Space Administration (NASA) -- met in Washington, D.C., on April 5, 1994. This was the first meeting of this group since Russia accepted the collective invitation to join the International Space Station partnership in December 1993. The heads of agencies evaluated positively the accomplishments since December 1993 to define the International Space Station Program and to bring Russia officially into the program.

The heads of agencies discussed the outcome of the recently completed Space Station System Design Review (SDR). CSA, ESA and NASDA noted the remarkable progress made to accommodate Russia as a new partner and to satisfy the interests of all the partners in the new program structure, and they commended NASA for its efforts to improve program efficiency and to clarify the potential for additional partner contributions. The heads of agencies agreed that the station configuration at SDR possesses increased robustness, has more capabilities and will become available to users at an earlier date. They noted the importance of defining in more detail the utilization strategy for the Space Station, particularly with regard to the Russian contribution. They also noted significant progress towards achieving a more beneficial distribution of operations roles among the partners.

The heads of agencies acknowledged the major advances made collectively over the past three months in bringing Russia into the International Space Station Program. Activities at the government and agency levels have paved the way for negotiation of the agreements necessary to formalize Russia's inclusion in the program. All expressed support for proceeding with these negotiations, scheduled to start in late April, in an expeditious manner. The heads of agencies also noted the importance of concluding, in a timely manner, the interim agreement between NASA and RSA to facilitate Russia's early participation in program management mechanisms. They share the determination that the International Space Station Program will be accomplished without further delay.

- end -

NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
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For Release:

Kyle Herring
RELEASE: 94-029

April 5, 1994

SHUTTLE ASTRONAUT GRABE MOVES TO ORBITAL SCIENCES CORP.

Veteran Space Shuttle Astronaut Ronald J. Grabe will leave NASA and the Air Force to join Orbital Sciences Corp., Dulles, Va., effective April 11.

Grabe, a four-time Shuttle flyer -- twice as pilot and twice as commander -- will retire from the Air Force with the rank of Colonel and become Vice President, Business Development for Orbital Sciences Corp.'s Launch Systems Group. At OSC, Grabe will assist in the development of launch vehicles and marketing strategy. He also will serve as the link with customers on future projects.

"We certainly will miss Ron. Not only is he a superb Shuttle commander, but he is a great technical manager as well," Flight Crew Operations Director David C. Leestma said. "It's a credit to the space industry that Ron's wealth of experience and knowledge will not be lost."

Grabe's first Shuttle flight in October 1985, STS 51-J, was a dedicated Department of Defense mission on the maiden voyage of Shuttle Atlantis. His second flight in May 1989 was on the STS-30 mission of Atlantis to deploy the Magellan probe, which has mapped more than 95 percent of the surface of Venus since arriving at the planet in 1990. The spacecraft continues to gather data on atmospheric conditions, as well as the planet's magnetic field.

Grabe's third mission in January 1992 was aboard Discovery on the STS-42 flight. The first International Microgravity Laboratory Mission (IML-1) was his first as commander. The crew worked in two shifts in the Spacelab module investigating the effects of microgravity on materials processing and life sciences in the course of more than 80 experiments.

- more -

In June 1993, Grabe served as Commander of the STS-57 mission aboard Endeavour. The multi-faceted mission included the first flight of the pressurized Spacehab module carrying 22 flight experiments in materials processing and life sciences. In addition, Grabe's crew retrieved the free-flying European Retrievable Carrier previously deployed during the STS-46 mission in August 1992. A spacewalk was conducted during the flight to evaluate various techniques for use on future missions.

Most recently, Grabe has served as a member of the Vehicle Review Board for the International Space Station.

"Ron has been a talented and insightful team member from the early days of Space Shuttle through four highly successful space flights as a crew member," said Robert L. "Hoot" Gibson, Chief of the Astronaut Office. "He has contributed greatly to our nation's space efforts and we wish him every possible success in his future endeavors."

Grabe was selected to be an astronaut in 1980. Prior to joining NASA, Grabe was an instructor at the U.S. Air Force Test Pilot School at Edwards Air Force Base, Calif. Since graduation from the Air Force Academy in 1966, he has logged more than 5,500 hours flying time in the F-100, F-111 and A-7 aircraft . Grabe flew 200 combat missions while assigned to the third Tactical Fighter Wing at Bien Hoa Air Base in Vietnam. He also served as a Royal Air Force Exchange Test Pilot at Boscombe Down, England.

In addition to his bachelor of science degree in engineering science from the Air Force Academy, Grabe studied aeronautics as a Fullbright Scholar at Technische Hochschule, Darmstadt, Germany. He was born in New York City in 1945.

- end -

NASA News

National Aeronautics and
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For Release:

Terri Sindelar
Headquarters, Washington, D.C.
(Phone: 202/358-1977)

April 5, 1994

RELEASE: 94-056

NASA FOSTERS AEROSPACE EDUCATION IN ARKANSAS

NASA today announced its intent to grant the Arkansas Aerospace Education Center $500,000 to implement its Technology Industry Resource Project to help develop enrichment opportunities for secondary school students statewide in mathematics, applied sciences and technology.

The new Aerospace Education Center is a unique collaboration of public and private interests to create a model education center, employing the latest teaching methods oriented to aerospace technologies. The center will include the Arkansas High Technology Training Center, an aerospace museum, a public library and an IMAX theater.

Students from across the state will experience new and challenging assignments in their classrooms and in the center's classrooms, in the museum, at the IMAX theater and in work-related projects provided by partners in business and industry.

The Aerospace Education Center supports the nation's education goals and the education reform movement. Recent legislation, "Goals 2000," was passed by Congress to establish the nation's education goals.

"NASA has been a supporter of the nation's education reform initiative, and this project will further the agency's efforts to support education reform," said Frank Owens, Director of NASA's Education Division, Headquarters, Washington, D.C.

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"The Technology Industry Resource Project that NASA is supporting addresses two priorities of the reform effort. The first is training for high technology careers and the second is supporting life-long learning," said Owens.

Technology Industry Resource Project

The Technology Industry Resource Project offers high school students the opportunity to learn about mathematics, applied sciences and technology through direct, "real world" experiences.

The goal is to interest and involve students in applied technology programs using these "real world" experiences and curriculum enhancement to interest students in pursuing high-technology career opportunities.

High school students will be offered field trips to and apprenticeships with industry and students will learn from guest lectures and "visiting scientists" who will visit individual schools and lecture at the center.

The grant also will be used to create curriculum enhancement modules to help teachers present applied science programs in the classroom in an interesting and effective manner. These materials will include workbooks, videos, computer simulations, working models and multimedia presentations. These support materials will provide model curriculum enhancements that can be duplicated for use in classrooms nationwide.

Other print and multimedia materials will be developed for use by teachers as preparation for and follow-up to the center's field trips, lectures and other aspects of the project.

The Arkansas Aerospace Education Center

The Aerospace Education Center is a public and private partnership for education to help prepare students for jobs in existing and emerging technology fields. The center is co-located with the aviation industries at the Little Rock Regional Airport.

The center is operated by the Arkansas Department of Education --General Education Division, Vocational Education Division and the Central Arkansas Library System -- and is supported by several Arkansas colleges and universities including the University of Arkansas at Little Rock, which is the lead university in the Arkansas Space Grant Consortium.

In 1993, the National Science Foundation awarded Arkansas a Statewide Systemic Initiative Grant for science instruction. In conjunction with this program the Arkansas Department of Higher Education will collaborate with the center to develop a visiting scientist program to reach all 7th grade students in Arkansas each year.

The Arkansas Aviation Historical Society is directly involved in creating and maintaining the Museum of Aviation History and the IMAX Theater. The Industrial Development Commission is involved with the Arkansas High Technology Training Center staff to help train future work forces and recruit high technology companies to Arkansas. The Arkansas Aviation Aerospace Commission and the Arkansas Science and Technology Authority serve on the advisory board appointed by the Governor.

- end -

NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
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AC 713 483-5111

For Release:
April 21, 1994

Brian Welch
RELEASE: 94-030

NITROGEN TETROXIDE ACCIDENTALLY RELEASED

At about 11:10 a.m. CDT today, a small quantity of nitrogen tetroxide (N2O4) was accidentally released from the Thermochemical Test Area at the Johnson Space Center during a test setup. This restricted area is located near the northern boundary of the Johnson Space Center.

The resulting cloud of N2O4 traveled westward and began to dissipate. All isolation valves in the test facility were immediately closed. Traffic in the vicinity of the cloud was halted briefly. Tests conducted downwind 30 minutes after the incident showed no detectable concentrations of the substance at ground level.

There were a number of minor injuries reported. As of 4 p.m. CDT, approximately 46 people had been treated at the JSC Clinic and at local hospitals for mild respiratory symptoms.

The Houston Fire Department and their hazardous materials team responded, as well as members of the Johnson Space Center emergency response team. A mishap investigation team is being formed by JSC management. As with any release of chemicals of this type, Texas state agencies have been notified.

Nitrogen tetroxide is an oxidizer used in some rocket engines. The Space Shuttle Reaction Control System and Orbital Maneuvering System rockets, for which JSC is responsible, use N2O4 as an oxidizer. JSC periodically performs small component level testing of this type.

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APn 04/21 2027 NASA-Chemical Leak

HOUSTON (AP) -- A chemical used in space shuttle engine fuel leaked from a storage facility at the Johnson Space Center, causing a toxic cloud Thursday. More than 50 people suffered eye, nose, throat and skin irritation.

The chemical, nitrogen tetroxide, can be fatal if inhaled in large amounts. None of the injuries was serious, officials said, but 30 employees were sent to a space center clinic for treatment and 25 others were treated at hospitals.

The cloud floated about 400 feet above the north side of the space center, where the chemical is stored, center spokesman Brian Welch said.

But winds quickly dissipated the cloud, which turned from red to yellow.

"We're not sure at this point how it was released," Welch said. "Clearly it was not intentional. We take extraordinary safety guards in our thermal chemical area."

Welch did not know how many people were working in the area where the chemical was released, nor did he know how much was released or commonly stored at the 1,620-acre space center. NASA and Houston Fire Department officials were investigating the leak.

APn 04/21 1718 Sasser-Leadership

By ALAN FRAM
Associated Press Writer

WASHINGTON (AP) -- Sen. Jim Sasser entered the race to succeed George Mitchell as Senate majority leader on Thursday, becoming the second declared candidate in the contest for the Senate Democrats' top job.

Sasser, D-Tenn., chairman of the Senate Budget Committee, is competing against Sen. Tom Daschle, D-S.D., for the leadership post.

Democratic senators will choose their new leader at the end of the year. Mitchell, D-Maine, will retire from the Senate in January.

Sasser, a moderate to liberal on most issues, has said for weeks that he probably would seek the job and has been trying to line up support for his run. He faces re-election to the Senate this fall, but is considered likely to win that race.

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"The job requires a mixture of seasoned experience, tough commitment to the Democratic Party's principles, and, most crucially, an ability to understand and accommodate the views of many different senators," Sasser wrote in a letter to colleagues. "Through 18 years in the Senate, I have seen these qualities in our finest party leaders, and I hope to follow their example."

Easygoing but at times sharply partisan, the 57-year-old Sasser has been in the Senate since 1977 but has had a low-profile career.

As budget panel chairman since 1989, he had a leading role pushing President Clinton's deficit-reduction bill through Congress last year, and a seat at the marathon 1990 budget summit between Democrats and the Bush administration.

He has also been a longtime critic of defense spending and of some expensive science projects like the space station.

Daschle, 46, has been in the Senate since 1987 and is probably a bit more liberal than Sasser.

Several other Democrats have recently declared they would not seek Mitchell's job, including Sens. Wendell Ford, D-Ky.; John Breaux, D-La.; Harry Reid, D-Nev.; and Patrick Leahy, D-Vt.

The Democratic leader will be majority leader if Democrats retain control of the Senate after the November elections.

RTw 04/21 1524 DANGEROUS CHEMICAL LEAKS FROM JOHNSON SPACE CENTER

HOUSTON, April 21 (Reuter) - At least 15 people were treated at local hospitals Thursday after a small amount of a sometimes fatal chemical leaked from a research area at the Johnson Space Centre, authorities said.

The people taken to two local hospitals near the centre complained of throat and breathing irritation.

The gas, known as nitrogen tetroxide, can be fatal in large amounts, space centre officials said.

The chemical is used in testing engines at the centre and as a propellant in space shuttle engine systems.

A NASA spokesman said the leak appeared as a small orange-coloured cloud that quickly dissipated as it rose into the air and no evacuations were ordered for the area.

"It dissipated quickly," the spokesman said. "We're now trying to establish the cause of the release."

REUTER

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For Release:

Jeffrey E. Carr
RELEASE: 94-032

April 29, 1994

SUSAN GARMAN NAMED EXECUTIVE ASSISTANT TO JSC DIRECTOR

Johnson Space Center Director Dr. Carolyn L. Huntoon has named Susan H. Garman as Executive Assistant to the Director, effective immediately. Garman will share responsibility for managing the institutional business of the Center such as facilities, manpower, and fiscal and budgetary matters including reimbursable agreements and loan agreements.

Garman began her career in 1967 as an engineering aide in the Mission Planning and Analysis Division as an employee with the Federal Electric Corporation. From 1983 to 1987, she was Director of Administration for Hernandez Engineering. While serving as a cooperative education student employed at the Johnson Space Center since 1987, Garman earned her bachelors degree in accounting from the University of Houston in 1989. After working in a variety of roles in the JSC Office of Procurement, she served as Executive Assistant to NASA Administrator Daniel Goldin, returning to JSC in 1993. She has most recently been assigned to the International Space Station Program's Procurement Office and the Office of the Director supporting organizational planning and transition.

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Kyle Herring
RELEASE: 94-033

For Release:

May 2, 1994

NOTE TO EDITORS:

AVAILABILITY OF SHUTTLE CREWS CHANGES FOR POST-FLIGHT INTERVIEWS

In an effort to improve the timeliness of information released to the news media about Space Shuttle missions, NASA has announced that the six astronauts who have recently returned from Endeavour's mission will be available for interviews as time permits during their debriefing schedule.

Typically, astronauts have been available for interviews following completion of mission debriefings, which usually last about two weeks. This earlier one-on-one interview availability replaces the standard post-flight press conference.

During the STS-59 mission, Commander Sid Gutierrez, Pilot Kevin Chilton and Mission Specialists Jay Apt, Rich Clifford, Linda Godwin and Tom Jones worked around the clock on two shifts using sensitive radar equipment to help understand global changes in the environment.

Endeavour's flight was the first flight of the Space Radar Laboratory. During the 11-day mission, almost 25 percent of the Earth's surface was mapped. A second flight of the equipment is scheduled for August.

The crew will show video highlights and slides from the flight during a presentation to employees at the Johnson Space Center, Houston, May 10, beginning at 3:30 p.m. CDT. The presentation will be preceded by the award of Space Flight Medals to the astronauts.

The briefing will be carried on NASA television. News media are invited to attend but questions are limited to employees only. NASA television is carried on Spacenet 2, transponder 5, channel 9, located at 69 degrees West longitude, with a frequency of 3880 MHz.

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Donald L. Savage
Headquarters, Washingon, D.C.
(Phone: 202/358-1547)

Lynne Simarski
National Science Foundation, Arlington, Va.
(Phone: 703/306-1070)

For Release:
May 6, 1994

NOTE TO EDITORS: N94-032

COMET IMPACT '94 MEDIA BRIEFING SET FOR MAY 18

The latest image of Comet Shoemaker-Levy-9, the "string of pearls comet" which will collide with Jupiter this summer, obtained from the Hubble Space Telescope will be released at a media briefing scheduled for 12 p.m. CDT, Wed., May 18, in the NASA Headquarters auditorium, 300 E St., S.W., Washington, D.C.

The briefing also will feature a science panel discussion of the impending impact with Jupiter and the worldwide NASA/National Science Foundation (NSF) program which will observe and study the event.

The panelists will be Dr. Eugene Shoemaker, U. S. Geological Survey, Flagstaff, Ariz., co-discoverer of the comet; Dr. Heidi Hammel, Massachusetts Institute of Technology, Cambridge; Dr. Lucy McFadden, University of Maryland, College Park; and Dr. Harold Weaver and Dr. Melissa McGrath, Space Telescope Science Institute, Baltimore, Md.

Following the panel discussion will be a brief presentation on the plans for NASA/NSF Comet Impact news media operations, which includes daily coverage on NASA television during the week of the impacts (July 16-22). Press kits containing information, images and fact sheets will be available for news media representatives. Also available will be a videotape of animation depicting fragments of the comet colliding with Jupiter.

The briefing will be carried live on NASA Television, on Spacenet 2, transponder 5, channel 9, 69 degrees West longitude, transponder frequency is 3880 MHz, audio subcarrier is 6.8 MHz, polarization is horizontal. There will be two-way question-and-answer capability for reporters covering the briefing from NASA centers.

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For Release:

James Hartsfield
RELEASE: 94-034

May 10, 1994

CONTRACT SIGNED FOR "GLASS COCKPIT" SHUTTLE UPGRADE

NASA has signed a contract modification with Rockwell International Space Systems Division, Downey, Calif. The contract, valued at $80.58 million, will provide for the production of the Multifunction Electronic Display Subsystem (MEDS) to be installed in each of the four Space Shuttle orbiters.

The MEDS consists of color active, matrix liquid crystal displays that will replace some of the current electromechanical flight instruments and meters in the Shuttle cockpit. Installation and first flight of the equipment is planned for 1998. Similiar technology, commonly called "glass cockpit" instrumentation, is already in use in commercial aircraft. The MEDS will be among the first United States-manufactured liquid crystal flat panel displays to be used in aerospace.

The displays will provide state-of-the-art, multifunction interfaces between the flight crew and the Shuttle orbiter's flight control computers. They will provide computer-generated information on altitude, airspeed, heading, vehicle attitude, and other aspects of flight control. They also will replace the current cathode ray tube displays in the Shuttle cockpit.

The contract covers the production of MEDS equipment to be installed in all Shuttle orbiter trainers and avionics laboratories at JSC. The contract also includes fabrication, assembly, acceptance testing, packaging and delivery of the MEDS hardware.

The majority of the prime contract effort will be performed at the Rockwell facility in Downey. The majority of subcontract effort will be performed at the Honeywell, Inc., facility in Phoenix, Az.

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Kari Fluegel

RELEASE: 94-037

For Release:

May 20, 1994

STATION SOLAR ARRAY MODULES TO BE SENT TO RUSSIA

The first set of solar array modules for the International Space Station program are ready to be shipped from the United States to Russia at the end of May, NASA announced today.

The modules of interconnected solar cells are prototypes of flight units which will be delivered in September to be incorporated into advanced solar arrays for use on Russia's Space Station Mir. NASA and Russia's Space Agency are carrying out a joint program involving flights of the U.S. Space Shuttle to Mir and Russian participation in the International Space Station. The advanced array, known as the Cooperative Solar Array, combines Russian flight proven structures and mechanisms with American advanced solar array modules to increase the available user electrical power on the station.

"This project combines the best technology from both the United States and Russia," said Randy Brinkley, manager of the International Space Station Program Office. "It represents one more milestone that shows how all the international partners are committed to building a world-class research facility in space."

The modules will be delivered in two shipments. The first is tentatively scheduled to be sent May 30 with the second shipment tentatively set for June 15. Once they arrive in Russia, NPO-Energia will validate the design and assembly procedures prior to launch of the photovoltaic arrays to Mir on the Space Shuttle in October 1995 to support the joint Shuttle/Mir space flights. The six arrays for the International Space Station will be launched in 1998.

The Cooperative Solar Array team is structured as an Integrated Product Team (IPT) consisting of NASA's Lewis Research Center, Cleveland, Ohio; Rockwell International's Rocketdyne Division, Canoga Park, Calif.; Lockheed Missiles and Space Corporation, Sunnyvale, Calif.; and NPO-Energia, Kaliningrad. The IPT concept, which is being

- more -

incorporated throughout the space station program, provides the necessary communications, flexibility and buy-in of all the team members and is critical to producing flight hardware in a reduced amount of time for lower cost. The Cooperative Solar Array project timeline will be less than two years from inception to deployment of the jointly produced array, making it one of the first pieces of hardware to be launched in the International Space Station program.

As the largest international scientific and technology development ever undertaken, the International Space Station will bring together resources from the United States, Russia, member nations of the European Space Agency, Canada and Japan. The first phase of the U.S./Russian program is a series of joint Shuttle/Mir space missions that will allow the United States to perform longer duration science experiments and verify station hardware concepts. Subsequently, the International Space Station will be assembled on-orbit with elements provided by the U.S., Russia, Europe, Japan and Canada. The first U.S. element launch will be in December 1997 with human-tended operations beginning in June 1998 after the launch of the U.S. laboratory. Assembly will be complete in 2002.

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NOTE TO EDITORS: Three photographs of Lockheed technicians inspecting the solar array modules are available in the Johnson Space Center's Still Photo Library. To order the photos, please call 713/483-4231.

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For Release:

Kyle Herring
RELEASE: 94-039

June 3, 1994

CREW NAMED FOR FIRST SPACE SHUTTLE, MIR DOCKING MISSION

A seven-member Space Shuttle crew, led by veteran astronaut Robert L. "Hoot" Gibson (Captain, USN), will launch next year to perform the first docking with the Russian Space Station Mir to exchange crews.

Joining Gibson on the mission will be Pilot Charlie Precourt (Lt. Col., USAF) and Mission Specialists Dr. Ellen Baker, Greg Harbaugh and Bonnie Dunbar. Russian cosmonauts Anatoly Solovyev and Nikolai Budarin will serve as the Mir-19 crew and replace Vladimir Dezhurov, Gennadiy Strekalov and astronaut Norman Thagard who are scheduled to be launched aboard a Soyuz spacecraft next March for a three month stay on the Space Station as the Mir-18 crew.

STS-71 is currently scheduled for launch in mid-1995 using the orbiter Atlantis, which has been modified to carry a docking system compatible with the Russian Mir Space Station.

The orbiter will carry a Spacelab module in the payload bay in which various life sciences experiments and data collection will take place throughout the 10-day mission.

Gibson, 47, currently Chief of the Astronaut Office, will be making his fifth flight aboard the Shuttle. His most recent mission was commander of Endeavour's STS-47 flight in September 1992, a cooperative Spacelab mission with Japan. Gibson's first flight as pilot of STS 41-B was in February 1984 aboard Challenger. That flight included deployment of two satellites and the first use of the free-flying Manned Maneuvering Unit by an astronaut. The eight-day mission ended with the first landing at the Kennedy Space Center, Fla.

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The STS 61-C flight of Columbia in January 1986 was Gibson's second mission and first as commander. The six-day flight included a communications satellite deployment and the conduct of several astrophysics and materials processing experiments. He next commanded Atlantis' STS-27 Department of Defense mission in December 1988.

Gibson considers Lakewood, Calif., to be his hometown. Active in the Navy since 1969, he holds a bachelor of science degree in aeronautical engineering from California Polytechnic State University.

Precourt, 38, will be making his second Shuttle flight. Since his first mission aboard Columbia in April 1993, Precourt has served in Mission Control as an ascent and entry spacecraft communicator (CAPCOM).

His first Shuttle flight, STS-55, was a German-sponsored Spacelab mission during which nearly 90 experiments investigating life sciences, materials sciences, physics, robotics, astronomy and the Earth and its atmosphere were conducted.

Precourt considers Hudson, Mass., to be his hometown. He has a master of science degree in engineering management from the U.S. Air Force Academy in 1977 and a master of arts degree in national security affairs and strategic studies from the U.S. Naval War College in 1990.

Baker, 41, was a mission specialist on two previous flights: STS-34 in October 1989 and STS-50 in June 1992. Prior to this assignment, Baker has been working Space Station operations issues.

Her first flight aboard Atlantis started the mission of the Galileo spacecraft currently on its way to study Jupiter. Her second mission was aboard Columbia on the first United States Microgravity Laboratory (USML-1) mission lasting two weeks. This first Extended Duration Orbiter flight included experimentation in crystal growth, fluid physics, fluid dynamics, biological science and combustion science.

Baker considers New York City her hometown. She received her doctorate of medicine degree from Cornell University in 1978.

Harbaugh, 38, has flown twice in space as a mission specialist: STS-39 aboard Discovery in April 1991 and on Endeavour's STS-54 mission in January 1993. Since that flight he has served as a CAPCOM in Mission Control and as the backup spacewalking expert for the Hubble Space Telescope servicing mission last year.

Harbaugh's first mission was the unclassified Department of Defense flight on which he operated the Shuttle's Remote Manipulator System (RMS) or Shuttle robot arm and the Infrared Background Signature Survey spacecraft.

Harbaugh's most recent flight included deployment of the Tracking and Data Relay Satellite and a spacewalk designed to refine training methods, and expand the experience of ground controllers, instructors and astronauts leading to assembly of the International Space Station.

Harbaugh's hometown is Willoughby, Ohio. He received a master of science degree in physical science from the University of Houston-Clear Lake in 1986.

Dunbar, 44, is currently training as the backup crew member to Norm Thagard for the Soyuz-Mir 18 mission in Star City, Russia. STS-71 will be her fourth Shuttle flight. She was a mission specialist on STS 61-A in October 1985, STS-32 in January 1990 and STS-50 in 1992.

Challenger's STS 61-A mission was the first German-sponsored Spacelab flight (Spacelab D-1). It was the first mission to carry eight crew members and the first that saw payload activities controlled from outside the U.S. More than 75 experiments were conducted during the seven-day flight.

Dunbar next flew aboard Columbia on the STS-32 mission to retrieve the Long Duration Exposure Facility which she secured using the RMS.

Most recently she flew aboard Columbia as the payload commander on the first United States Microgravity Laboratory (USML-1) mission.

Dunbar was born in Sunnyside, Wash. She received her doctorate in biomedical engineering from the University of Houston in 1983.

Solovyev and Budarin will serve as the next crew to stay for an extended period aboard the Mir Space Station and are designated the Mir-19 crew. Solovyev, 45, was born in Riga, Latvia, but resides in Star City, Russia.

Budarin, 40, was born in Chuvash Autonomous Republic, Kirya, Altir region. He lives in Kaliningrad outside of Moscow, Russia.

Solovyev and Budarin will switch places with the Mir-18 crew (Dezhurov, Strekalov and Thagard) which is scheduled to conduct three months of experiments aboard Mir before returning to Earth aboard Atlantis with the other five crew members.

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Thagard, 50, has flown four times on the Shuttle and will be a member of the Mir-18 crew scheduled for launch aboard a Soyuz spacecraft from the Baikonur Cosmodrome in Kazakhstan.

Thagard's Shuttle missions include STS-7 in June 1983 and STS 51-B in April 1985, both aboard Challenger; STS-30 in May 1989 on Atlantis, and STS-42 in January 1992 aboard Discovery.

STS-7 was the first mission with a crew of five and the first to deploy and retrieve a spacecraft using the RMS. Two satellites also were deployed during the flight. Thagard's sec[Cnd flight was a[CSpacelab mission that included a research animal holding facility carrying 24 rats and two monkeys.

His third flight deployed the successful Magellan spacecraft that continues to orbit Venus. Thagard's most recent mission was the first International Microgravity Laboratory (IML-1) flight that included 55 experiments provided by investigators from 11 countries.

Dezhurov, 32, was born in Mordov Autonomous Republic, Yavas, Zubo-Polyansky district. He resides in Star City.

Strekalov, 53, was born in Mitishchi outside of Moscow, Russia and now resides in Moscow.

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For Release:

Steve Nesbitt
RELEASE: 94-036

June 16, 1994

HUNTOON ANNOUNCES CENTER REORGANIZATION

Organizational changes that will help NASA meet its Space Shuttle and Space Station goals, and position the Johnson Space Center for the future were announced today by Center Director Dr. Carolyn L. Huntoon.

"Since becoming Director in January, I have given a great deal of thought to how we can best organize to deal with the challenges and the opportunities that lie ahead. Our current structure and business practices have served us well in the past. However, I believe this new organization, combined with new ways of doing business, will position us well for the future."

In an announcement to employees, Huntoon said the challenge to assure the success of the Shuttle and International Space Station programs in light of reduced budgets provides the basic framework for change.

"Faced with unprecedented challenges in the form of diminishing resources and the need to effectively support two major programs, we must find ways to take greater advantage of the unique combination of expertise in engineering, science and operations at this center," said Huntoon. "We currently enjoy the greatest level of public support in recent years, and we must deliver on that support. These changes will help us do that."

The changes are designed to streamline and strengthen support to projects and programs, strengthen core technical capabilities, improve business practices, and place greater emphasis on partnerships and teaming arrangements with industry, academia, and other government agencies.

Key in the reorganization is a new Projects Office which has been established to bring a greater focus to projects and efforts which support the major programs by effectively teaming the science, technical and engineering strengths of the Center's workforce.

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In a move to further strengthen the Center's core technical capabilities, a number of key functions will be shifted and realigned among the larger technical organizations for greater efficiency and depth of talent.

To streamline and improve business management and institutional support functions at the center, a new business management organization will be created to carry out basic change in the way budget, procurement, and financial support is provided to the key organizations. Center information systems and processes will be reorganized to support the new business approach.

Huntoon also announced a number of planned cultural changes intended to promote and develop teamwork, experience, and diversity in the activities of the center. Rotational assignments will be encouraged as a means to broaden the knowledge and experience of employees and to develop leaders for the future.

The concept of "teaming" will be employed with groups of experts from one organization located in others where their services are utilized. Managers will be challenged to take active roles in forming partnerships and teaming arrangements with industry, academia, and other government agencies.

A number of key leadership changes were also announced. "There is a great deal of talent at JSC which affords me the opportunity to make several key appointments that will contribute to the diversity of our management team and energize the process of change," said Huntoon.

The new Projects Office will be headed by Larry Bourgeois, a former Space Shuttle flight director who is currently the assistant director of Mission Operations for the Space Station program. Within the Projects Office, a new office headed by astronaut Frank Culbertson will be responsible for JSC's project support to the joint Shuttle-Mir activities with Russia's space agency.

Terrence Hesse, former assistant director of the Houston district office of the Internal Revenue Service, will become the director of the new Business Management Directorate. Jane Stearns, currently deputy director of the Shuttle Program Office's Management Integration Office, will be the new director of the Information Systems Directorate (ISD).

Jack Garman, formerly deputy director of ISD, will fill the newly-created position of Chief Information Officer, reporting to the Center Director. In that role, he will establish common standards and practices in the use and development of information systems at JSC.

John O'Neill has been named as director of Mission Operations and Astronaut Tom Akers has been detailed to the organization as deputy director. Astronaut Steve Nagel will be detailed as deputy director of Safety, Reliability, and Quality Assurance.

James Hickmon will head the Center Operations Directorate (COD), and Richard Thorson will join him as deputy director. Grady McCright, the current COD director, will become Manager of JSC's White Sands Test Facility in New Mexico.

Director of Public Affairs, Harold Stall will join Huntoon's staff as special assistant for Community Relations and Special Projects. In this role, he will undertake a new effort to identify areas of common interest between JSC and the greater Houston community, and develop plans for new cooperative ventures in these areas. Jeffrey Carr, currently chief of the News and Information Branch, will serve as acting director of Public Affairs.

Estella Gillette will serve as acting director of Equal Opportunity Programs, replacing Dr. Joseph Atkinson who will join the Office of Public Affairs to take on a new role designed to strengthen JSC's ties to minority educational institutions across the country.

"Together with our reorganization," Huntoon said, "these changes to our culture and leadership will help ensure that we are in the best possible position to fulfill our responsibilities, and provide a challenging and rewarding work environment for our people."

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Kyle Herring
RELEASE: 94-041

For Release:
June 17, 1994

ASTRONAUT BOLDEN RETURNS TO MARINE CORPS

Four-time Space Shuttle Astronaut Charles F. Bolden, Jr., (Colonel, USMC) will leave NASA and return to active duty in the U.S. Marine Corps as the Deputy Commandant of Midshipmen at the Naval Academy, Annapolis, Md., effective June 27.

Bolden leaves NASA after 14 years. He was selected to be an astronaut in 1980 and held several technical assignments within the Astronaut Office prior to his first Shuttle flight in January 1986 aboard Columbia on the STS 61-C mission. During the six-day flight, the crew deployed a communications satellite and conducted several experiments in astrophysics and materials processing.

His second flight was aboard Discovery on the STS-31 mission to deploy the Hubble Space Telescope in April 1990. As commander of Atlantis' STS-45 mission in March 1992, Bolden watched over the orbiter during the conduct of 12 experiments that made up the first Atmospheric Laboratory for Applications and Science (ATLAS-1) payload. The mission was the first dedicated to NASA's Mission to Planet Earth.

Bolden's final Shuttle mission was in February aboard Discovery on the STS-60 flight. The mission marked the first joint U.S./Russian Shuttle flight with a cosmonaut flying as a crew member. It was the second flight of the Spacehab middeck augmentation module and the first flight of the Wake Shield Facility designed to evaluate the effectiveness of growing semiconductors, high temperature superconductors and other materials using the ultra-high vacuum created behind the spacecraft near the experiment package.

"It is with mixed emotions that we say goodbye to Charlie, but we wish him well at Annapolis," said David C. Leestma, Flight Crew Operations Director. "Having served as a crew member with him, I saw a clear demonstration of the leadership qualities he has.

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While we will miss Charlie, he certainly has left a positive mark, not only on the astronaut corps, but on everyone who knows him throughout NASA."

In his new role as Deputy Commandant of Midshipmen, Bolden will assist the Commandant with the formulation and execution of Naval Academy policy. He will be responsible for the execution of the day-to-day routine of the Brigade. Bolden also will coordinate and direct the training of the Brigade Officers.

In addition to flying more than 680 hours during his four space missions, Bolden has logged over 6,000 hours flying time in various aircraft, including the A-6A and A-6E, the EA-6B, the A-7C/E and several NASA training aircraft.

Bolden, 47, graduated from the Naval Academy in 1968 with a bachelor of science degree in electrical science. He received a master of science degree in systems management from the University of Southern California in 1977.

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(Phone: 205/544-0034)

For Release:

June 20, 1994

RELEASE: 94-098

NASA SELECTS PAYLOAD SPECIALISTS FOR SPACELAB MISSION

The National Aeronautics and Space Administration today announced the selection of Dr. Fred W. Leslie of NASA's Marshall Space Flight Center, (MSFC) Huntsville, Ala., and Dr. Albert Sacco, Jr., of Worcester Polytechnic Institute, Worcester, Mass., to fly as payload specialists on the second United States Microgravity Laboratory (USML-2) mission. USML-2 is a 16-day Spacelab mission scheduled for flight aboard the Space Shuttle Columbia in Sept. 1995.

Dr. Leslie, 43, earned a Ph.D in atmospheric science with a minor in fluid dynamics from the University of Oklahoma. He is chief of the MSFC Earth System Processes and Modeling branch. He resides in Huntsville, Ala.

Dr. Sacco, of Holden, Mass., earned a Ph.D in chemical engineering from the Massachusetts Institute of Technology. He is a professor and head of the chemical engineering department at Worcester Polytechnic Institute. The 44-year-old Sacco was an alternate payload specialist for the USML-1 mission.

NASA has designated Dr. R. Glynn Holt of NASA's Jet Propulsion Laboratory, Pasadena, Calif., and Dr. David H. Matthiesen of Case Western Reserve University, Cleveland, Ohio, to serve as alternates to Leslie and Sacco.

During the mission, Leslie and Sacco will conduct more than 30 scientific and technological investigations in materials, fluids and biological processes in the orbiting laboratory. They will be supported by Holt and Matthiesen, who will serve as key control team members in the Spacelab Mission Operations Control facility at MSFC.

-end-

NASA News

National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release:

Charles Redmond
Headquarters, Washington, D.C.
(Phone: 202/358-1757)

June 21, 1994

RELEASE: 94-099

NASA ANNOUNCES 1994 PHASE ONE STTR SELECTIONS

NASA's Office of Advanced Concepts and Technology today announced the selection of six research proposals for immediate negotiation of 1994 Phase I contracts in the Small Business Technology Transfer Program (STTR).

The 1994 Phase I solicitation closed on March 3, 1994. Twenty-nine separate proposals were received from 28 small, high technology businesses from all sections of the United States in response to the specific topic of interactive document and data review tools.

The STTR program is similar to the Small Business Innovative Research program but varies by allowing universities, federal laboratories and non-profit organizations to apply in cooperation with small business partners. The STTR program also is more directly aimed at private sector commercialization activities, with Phase I projects geared toward product development and Phase II projects geared toward product commercialization.

Experts from NASA's Goddard Space Flight Center, Greenbelt, Md., academia, and commercial businesses reviewed the proposals for technical merit and commercial potential. Each of the six selected proposals in this round will be awarded fixed-price contracts valued at up to $100,000 with 12 months to complete the Phase I projects.

Companies which successfully complete Phase I activities become eligible to compete for Phase II awards the following year. The Phase II award process allowsb for two-year, fixed-price contracts up to $500,000.

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NASA also will select approximately 14 additional proposals from those submitted in the other topic categories of general aviation instrumentation and systems, and small-scale robotics. These additional selections will be made in late June.

Firms and their partners selected for negotiation of Phase I contracts in this first round of the 1994 STTR Program are:

(proposal, firm and address, partner(s) and addresses)

1. Director Based System for Administering High Quality Software Repositories; Interconnect Technologies Corp., P.O. Box 4158, Mountain View, Calif. 94040-0148; Stanford University, Computer Science Dept., Stanford, Calif. 94305.

2. Automated Capture of Technical Manuals into IETM Format for Electronic Review and Distribution; Cybernet Systems Corp., 1919 Green Rd., Suite B-101, Ann Arbor, Mich. 48105; University of Michigan, 2901 Hubbard St., Ann Arbor, Mich. 48109-2106.

3. Interactive Archive for Data Standards; Interactive Archives Inc., 11324 Cherry Hill Rd., Unit 202, Beltsville, Md. 20705; University of Colorado, Campus Box 590, Boulder, Co. 80309.

4. Distributed Environment for Interactive Document and Data Review; Diginet Research Inc., 3019 Orchard Hill, San Antonio, TX 78230; University of Houston, 4800 Calhoun Rd., Houston, Texas 77204.

5. An Interactive Information Exchange and Retrieval Tool; Innovative Aerodynamic Technologies; 534-C Wythe Creek Rd., Poquoson, Va. 23662; Old Dominion University, Hampton Blvd., Norfolk, Va. 23529.

6. A Data Publishing System (DPS) for NASA Earth and Space Science Datasets; Grafikon Ltd., 11329 Classical Ln., Silver Spring, Md. 20901; University of Maryland, Dept. of Astronomy, College Park, Md. 20742.

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NASA News

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For Release

Michael Braukus
Headquarters, Washington, D.C.
(Phone: 202/358-1979)

June 22, 1994

RELEASE: 94-100

NASA SELECTS SCIENTISTS FOR NEUROLAB SHUTTLE MISSION

NASA announced today the selection of 34 scientists who will participate in the experiment definition phase of the Neurolab Space Shuttle mission. Neurolab, a 14 to 16-day joint Shuttle mission with the National Institutes of Health (NIH) devoted to brain and behavioral research, is scheduled for launch in early 1998.

The 34 investigators were selected from over 170 scientists from around the world who submitted proposals for experiments to be conducted on the mission. All of the proposals underwent rigorous peer review conducted by the NIH Division of Research Grants which evaluated them for their scientific merit. The chosen studies were deemed to be the best experiments that could be accommodated on the Space Shuttle. The selected scientists are from the United States, Japan, France, Canada, Italy, Germany, the Netherlands and Nigeria.

The Neurolab scientists will be organized into investigator teams, based on the scientific areas of their research. Examples of topics that will be studied include how the brain develops in microgravity, how the sense of balance and control of movement is altered in microgravity and what effects the space environment has on sleep and the body's biological rhythms. The teams will undergo a ten-month science definition period during which time each team will produce an integrated research plan based on the original proposals. After the science definition period, the integrated research plans will once again be reviewed to ensure that the experiments to be conducted on the mission are of the highest quality.

The Neurolab Mission is being carried out by NASA in cooperation with a variety of domestic and international partners. The major domestic partner is the NIH, specifically the National Institute on Aging, the National Institute on Deafness and Other Communication Disorders, the National Heart, Lung, and Blood Institute, the National

Institute of Neurological Disorders and Stroke, the National Institute of Child Health and Human Development and the Division of Research Grants. The National Science Foundation and the Office of Naval Research also are domestic partners. International partners include the European Space Agency and the space agencies of Japan, France, Germany and Canada. The partners are supporting the mission by providing some funding for the scientists, supplying scientific equipment to be used on the Space Shuttle and participating in mission planning.

The Neurolab scientists whose experiments were selected for definition are:

Friedhelm J. Baisch, M.D.
DLR Institute of Aerospace Medicine
Cologne, Germany

Kenneth M. Baldwin, Ph.D.
University of California, Irvine
Irvine, Calif.

Alain Berthoz, Ph.D.
CNRS/Collge de France
Paris, France

Ingrid M. Block, Ph.D.
DLR German Space Research Institute
Cologne, Germany

C. Gunnar Bloomqvist, M.D., Ph.D.
University of Texas Southwestern Medical Center
Dallas, Texas

Otmar Bock, M.D.
Institute of Space & Terrestrial Science
Ontario, Canada

Scott T. Brady, Ph.D.
University of Texas Southwestern Medical Center
Dallas, Texas

Barbara Chapman, Ph.D.
California Institute of Technology
Pasadena, Calif.

- more -

Gilles R. Clement, Ph.D.
National Center for Scientific Research
Paris, France

Bernard Cohen, M.D.
Mount Sinai School of Medicine
New York, N.Y.

Charles A. Czeisler, M.D., Ph.D.
Harvard Medical School/Brigham & Women's Hospital
Cambridge, Mass.

Dwain L. Eckberg, M.D.
Medical College of Virginia
Richmond, Va.

Charles A. Fuller, Ph.D.
University of California, Davis
Davis, Calif.

Stephen M. Highstein, M.D., Ph.D.
Washington University
St. Louis, Mo.

Gay R. Holstein, Ph.D.
Mount Sinai School of Medicine
New York, N.Y.

Eberhard R. Horn, Ph.D.
University of Ulm
Ulm, Germany

Bruce G. Jenks, Ph.D.
University of Nijmegen
Nijmegen, Netherlands

Haig S. Keshishian, Ph.D.
Yale University
New Haven, Conn.

-more-

Kenneth S. Kosick
Harvard Medical School/Brigham & Women's Hospital
Cambridge, Mass.

Bruce L. McNaughton, Ph.D.
University of Arizona
Tucson, Ariz.

Philip C. Njemanze, M.D.
Chidicon Medical Center
Owerri, Nigeria

Richard S. Nowakowski, Ph.D.
UMDNJ-Robert Wood Johnson Medical School
Piscataway, N.J.

Charles M. Oman, Ph.D.
Massachusetts Institute of Technology
Cambridge, Mass.

Ottavio Pompeiano, M.D.
University of Pisa
Pisa, Italy

Jaqueline Raymond, Ph.D.
University of Montpellier
Montpellier, France

Danny A. Riley, Ph.D.
Medical College of Wisconsin
Milwaukee, Wis.

David Robertson, M.D.
Vanderbilt University School of Medicine
Nashville, Tenn.

Muriel D. Ross, Ph.D.
NASA Ames Research Center
Moffett Field, Calif.

-more-

Tsuyoshi Shimiju, M.D., Ph.D.
Fukushima Medical College
Fukushima City, Japan

Tracey J. Shors, Ph.D.
Princeton University
Princeton, N.J.

Shiro Usui, Ph.D.
Toyohashi University of Technology
Aichi, Japan

Kerry Walton, Ph.D.
New York University Medical Center
New York, N.Y.

John B. West, M.D., Ph.D.
University of California, San Diego
San Diego, Calif.

Michael L. Wiederhold, Ph.D.
University of Texas Health Center at San Antonio
San Antonio, Texas

- end -

NASA News

National Aeronautics and
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Lyndon B. Johnson Space Center
Houston, Texas 77058
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For Release:

June 23, 1994

Tammy Jones
Goddard Space Flight Center, Greenbelt, Md.
(Phone: 301/286-8955)

Brian Dunbar
Headquarters, Washington, D.C.
(Phone: 202/358-0873)

RELEASE: C94-w

NORTH AMERICA TELECOMMUNICATIONS, INC., SELECTED TO NEGOTIATE CONTRACT

NASA has selected North America Telecommunications, Inc., Washington, D.C., to negotiate a cost-plus-award-fee contract to provide plant operations and maintenance support to NASA's Goddard Space Flight Center (GSFC), Greenbelt, Md. The total estimated cost and fee for the contract is $42 million.

This 5-year contract will provide operations and maintenance to all facilities and equipment at the GSFC in support of the Facilities Management Division. The contract period will be from Sept. 1, 1994 through Aug. 31, 1999.

Ameriko, Inc., Pasadena, Calif.; Eagle Maintenance Services, Inc., Washington, D.C., and Temp-Air Company, Inc., Baltimore, Md., also submitted proposals.

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For Release:

June 23, 1994

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Bruce Buckingham
Kennedy Space Center, Fla.
(Phone: 407/867-2468)

NOTE TO EDITORS: N94-45

NASA SETS JULY 8th AS DATE FOR NEXT SHUTTLE LAUNCH

NASA managers today set July 8 as the official launch for the agency's next Space Shuttle mission -- designated as STS-65. Space Shuttle Columbia and a seven person crew, which includes the first Japanese female to fly in space, will conduct the second flight of the International Microgravity Laboratory (IML-2) payload.

The STS-65 mission involves a world-wide research effort into the behavior of materials and life in the weightless environment of Earth-orbit. Data gathered during the IML-2 mission may help researchers develop the next generation of materials needed for high-tech applications and will provide scientists with insights about life in space which in turn can increase knowledge of the factors which govern life and health on Earth.

The IML-2 mission is an international effort with scientists from NASA, the European Space Agency (ESA), the French Space Agency (CNES), the German Space Agency (DARA), the Canadian Space Agency (CSA) and the National Space Development Agency of Japan (NASDA) cooperating in planning the experiments which will be performed during the STS-65 mission. More than 200 scientists developed some 100 investigations for the IML-2 mission.

The launch on July 8 is currently planned for 12:43 p.m. EDT at the start of a 2 1/2 hour available window. The planned mission duration is 13 days, 17 hours, 56 minutes. An on-time launch on July 8 would produce a landing at approximately 6:40 a.m. EDT on July 22, 1994 at the Kennedy Space Center's Shuttle Landing Facility.

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STS-65 will be the 17th flight of Space Shuttle Columbia and the 63rd flight of the Space Shuttle system.

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For Release:

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Headquarters, Washington, D.C.
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June 23, 1994

RELEASE: 94-101

NASA AND RUSSIAN SPACE AGENCY SIGN SPACE STATION INTERIM AGREEMENT AND $400 MILLION CONTRACT

NASA and the Russian Space Agency (RSA) signed two significant documents today which put the United States and Russian space cooperation on a firm basis and underpin Russian participation in the International Space Station program.

NASA and RSA signed an "Interim Agreement for the Conduct of Activities Leading to Russian Partnership in Permanently Manned Civil Space Station" that provides for initial Russian participation in the International Space Station program. The Interim Agreement will govern Russian participation until an Intergovernmental Agreement (IGA) and a NASA-RSA Memorandum of Understanding can be concluded.

"This interim agreement is an essential step toward Russia's full participation in the International Space Station project. Just as the race to the moon defined the Cold War competition between the superpowers, the Space Station will define a new era of peace and cooperation for the world," said Daniel S. Goldin, NASA Administrator.

NASA and RSA also signed a separate $400 million contract for Russian space hardware, services and data. Under this contract, NASA will purchase hardware and services from RSA and its subcontractors for approximately $100 million per year through 1997 in support of a joint program involving the U.S. Space Shuttle and the Russian Mir Space Station. The contract also covers early International Space Station activities.

The Interim Agreement and $400 million contract were separately signed by NASA Administrator Daniel S. Goldin and RSA Director General Yuri Koptev at a formal

- more -

signing ceremony in Washington D.C. at the conclusion of the U.S.-Russian Joint Commission on Economic and Technological Cooperation meeting presided over by Vice President Gore and Prime Minister Chernomyrdin.

NASA/RSA Interim Agreement

The Interim Agreement establishes bilateral management mechanisms which are fully consistent with existing management mechanisms utilized by the International Space Station partners. It also provides for Russian participation in the existing multinational Space Station management mechanisms.

The agreement establishes, among other things, a NASA/RSA Program Coordination Committee which will review design and development activities during this initial cooperation. It also provides for RSA's participation on the Space Station Control Board, along with the other partners, which controls the Space Station requirements, configuration, and interfaces through the completion of assembly and initial operational verification. RSA also will be included in the Multilateral Coordination Board which ensures coordination of the operation and utilization activities of the Space Station.

The agreement provides for the establishment of Space Station technical liaison offices in Moscow and Houston for purposes of facilitating the working relationships between NASA and RSA.

Multilateral negotiations involving Russia and other Space Station partners on a protocol amending the Space Station Intergovernmental Agreement are currently underway. Negotiations on the NASA-RSA Memorandum of Understanding will begin later this summer.

NASA/RSA $400 Million Contract

Activities included in this Contract expand on an ongoing cooperative program under the Human Space Flight Agreement. That agreement, concluded in 1992, provides for a U.S. astronaut flight on Mir for three months and a Space Shuttle to dock with Mir in 1995. Key elements of the $400 million Contract include:

o U.S. astronauts will spend up to 21 additional months on board the Russian Mir station, giving a new generation of American astronauts and scientists their first experience with long-duration space flight.

o The U.S. Space Shuttle will dock as many as nine additional times with the Mir station, delivering astronauts and research instruments. NASA will gain fundamental experience in joint operations: risk reduction, command and control, docking the Shuttle with large structures in space, performing technology experiments, and executing a joint research program.

o The implementation of a joint research program onboard Mir, including astronauts and cosmonauts and U.S. and Russian experiments. The Russian Spektr and Prirod research modules will be extensively used.

o The Russians will provide flight-proven equipment, including several docking mechanisms for use with Mir and later with the International Space Station.

o Joint development of Solar Thermal Dynamics, a newer and more efficient way to generate electrical power in space.

o Joint technology demonstrations of systems that may be used on the International Space Station.

o Demonstrations of joint operations and activities, such as Extravehicular Activity (EVA).

o Up to $20 million to support Russian scientists engaged in joint scientific and research programs to support science, technology and engineering on board the Mir Space Station.

o Initial development funding for the FGB module that NASA will purchase for use on the International Space Station.

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NASA/RSA $400M CONTRACT
FACT SHEET

- At the Joint Commission Meeting led by Vice-President Gore and Prime Minister Chernomyrdin in Washington on June 22-23, 1994, NASA and RSA concluded a Contract worth $400M for supplies and services in support of a joint space flight program leading up to the development of the International Space Station Alpha (ISSA).

- This Contract was described in the Joint Statement issued by Vice-President Gore and Prime Minister Chernomyrdin at the first Joint Commission meeting in September 1993. It was later agreed to in the November 1 Addendem to the Program Implementation Plan and in the Protocol to the Human Space Flight Agreement signed by Administrator Goldin and General Director Koptev. An initial Letter Contract was signed at the last Joint Commission meeting on December 16, 1993, in Moscow. This Contract definitizes that Letter Contract.

- Under this Contract, NASA will purchase supplies and services from RSA and its subcontractors for approximately $100M per year through 1997 in support of a joint program involving the U.S. Shuttle and the Russian Mir Space Station and including early ISSA activities. These activities expand on an ongoing cooperative program under Human Space Flight Agreement, under which a U.S. astronaut will fly on Mir for three months and a Shuttle will dock with Mir in 1995.

- The purpose of the joint activities is to:

  - reduce ISSA program risk by gaining experience in conducting joint operations and programs;
  - to demonstrate technologies to be used for ISSA;
  - to study and develop interoperability where possible; that is, to be able to exchange and use together each other's systems, such as EVA suits; and
  - to conduct research in space much earlier than would otherwise be possible.

- Major activities covered under this contract include:

  - Support for up to 21 additional months of total flight time of a U.S. astronaut aboard Mir, including training, logistics, and consumables.
  - Support for up to nine additional Shuttle flights and dockings with Mir.

- Use of Russian Spektr and Priroda research modules to support U.S. research experiments.
- Implementation of a joint U.S./Russian research program, including involvement of Russian cosmonauts on-board Mir.
- Joint technology developments and demonstrations, including solar dynamics, extravehicular activities (EVA), and life support.
- Extension of the lifetime of Mir beyond 1995 to cover these activities.
- Support research cooperation between U.S. and Russian scientists, technologists, and engineers.
- A docking module and associated hardware to allow repeated Shuttle dockings with Mir.
- Docking mechanisms and associated hardware to be used by the Shuttle and the International Space Station Alpha.
- Joint operations demonstrations and activities.
- Interoperability for ISSA EVA suits.
- Initial funding for the FGB module, which NASA will purchase for ISSA.
- Components for a common EVA airlock for ISSA.
- Data and information on Russian systems to be used on ISSA, including for the Service Module, Science Power Platform, life support systems, and others. Service Module modifications are also included.

- This contract will be managed by the Space Station Program Office at Johnson Space Center.

- Separately, NASA and RSA have signed an Interim Agreement to allow early Russian involvement in the ISSA program as a Space Station Partner on a cooperative basis. An Intergovernmental Agreement (IGA) and a Memorandum of Understanding (MOU) will be signed by the end of the year to formalize this partnership. Under the IGA and MOU, Russia will provide Russian modules, support and services for the ISSA development and operation on a cooperative basis.

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Marcia Adams
Federal Aviation Administration, Washington, D.C.
(Phone: 202/267-8521)

Mary Sandy
Virginia Space Grant Consortium
(Phone: 804/865-0726)

For Release:

June 23, 1994

RELEASE: 94-102

NASA/FAA SPONSOR GENERAL AVIATION COMPETITION

NASA and the Federal Aviation Administration (FAA) today announced their joint sponsorship of a general aviation design competition for students at U.S. aeronautical and engineering universities. The contest will challenge teams of undergraduate and graduate students -- working with faculty advisors -- to develop a multi-disciplinary design for a general aviation aircraft.

Complete competition guidelines will be available by mid-July. Designs must be submitted by May 1, 1995. Up to four cash awards totaling $11,000 will be announced at an awards ceremony in July 1995 at the annual Experimental Aircraft Association Fly-In Convention and Sport Aviation Exhibition at Oshkosh, Wisc.

"These are the types of opportunities NASA needs to develop to capture the bold initiative and innovative enthusiasm that exists in our nation's college ranks," said Dr. Wesley L. Harris, NASA's Associate Administrator for Aeronautics. "This partnership with academia -- and ultimately, industry -- represents the way we want to do business at NASA," he said.

- more -

Richard A. Weiss, the FAA's Director of General Aviation and Vertical Flight Research and Development notes, "It is the policy of the FAA to foster and promote general aviation. It is our hope that participation by universities will become an integral part of the revitalization effort now underway and that the competition will serve to stimulate breakthroughs in technology and its application."

Technologies to be addressed in the competitive designs will include integrated cockpit systems, propulsion, integrated design and manufacturing and aerodynamics. For purposes of the competition, general aviation aircraft are defined as fixed-wing, single-engine, single pilot, propeller-driven aircraft.

"Universities have drifted away from general aviation with the decline in the industry's condition. NASA and the FAA developed this competition to help reverse that trend and begin to involve faculty and students in general aviation," said Dr. Bruce J. Holmes, Manager of NASA's General Aviation Program Office, Langley Research Center, Hampton, Va.

All designs submitted in accordance with competition guidelines will be reviewed by a selection panel of representatives from NASA, the FAA and industry. All design projects will receive critical evaluation and feedback. Faculty and students are encouraged to plan now to incorporate this design challenge into fall design classes and projects. Involvement of industry advisors is encouraged, as is the participation of women and minorities on design teams. Teaming across departments and among institutions also is encouraged.

Interested faculty and students may request guidelines from: Virginia Space Grant Consortium, 2713-D Magruder Blvd., Hampton, Va. 23666. Requests may be faxed to 804/865-7965. The Consortium, a nonprofit aerospace educational coalition, is disseminating information on the competition on behalf of the sponsoring agencies.

- end -

NASA News

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For Release:

June 24, 1994

Drucella Andersen
Headquarters, Washington, D.C.
(Phone: 202/358-4733)

H. Keith Henry
Langley Research Center, Hampton, Va.
(Phone: 804/864-6120)

RELEASE: C94-x

NASA NEGOTIATES AERO CONTRACTS WITH BOEING/DOUGLAS

NASA has selected Boeing Commercial Airplane Group, Seattle, Wash., and McDonnell Douglas Aerospace, Long Beach, Calif., for negotiation of contracts estimated at $62 million to develop technologies in support of the Advanced Subsonic Technology program.

Under the potential five-year contracts to be managed by NASA's Langley Research Center, Hampton, Va., Boeing and Douglas will develop better wing design methods leading to improved aircraft performance and reduced design cycle time and cost.

Under the Advanced Subsonic Technology program, NASA is developing technology to make present and future generations of American subsonic aircraft environmentally compatible, economical and competitive with foreign products.

- end -

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For Release

Mark Hess
Headquarters, Washington, D.C.
(Phone: 202/358-0902)

June 24, 1994

RELEASE: 94-103

NASA ADMINISTRATOR RELEASES STATEMENT ON GAO REPORT

"This GAO report is a validation of what we've been saying for months -- Russian participation in the Space Station is a good deal for the American taxpayer," NASA Administrator Daniel S. Goldin said. "It will save hundreds of millions, if not billions of dollars. For the American taxpayer, it's a win-win situation. More Space Station for less cost."

"I'm particularly pleased with the GAO's positive assessment of how valuable the Russian contribution will be in terms of significantly improving the capability for science and engineering research. The report echoes what members of the Vest Committee said about the program. I see this report as further validation of the value the Russians bring to the Space Station program."

Goldin said the benefits of Russian cooperation include:

- the Space Station will be completed 15 months earlier, will have nearly double the volume, double the power, twice as many research modules and a larger crew

- flight-proven space hardware which would cost the U.S. billions to develop

- access to Mir for collecting valuable science

- access to Mir to check out our hardware, which reduces risk

- access to Mir to obtain early operational experience, which reduces risk

-more-

The GAO report stated that about $746 million from two extra Shuttle flights should be scored against the $2 billion in savings from Russian participation. Goldin's response was, "We're going to fly eight Shuttle missions a year. The point is, the money for those flights is in the budget; there's no additional costs due to Russian cooperation.

"For the most part, the only quibble we have with the GAO is a book-keeping issue. The fact is, every nickel is accounted for in the NASA budget, and Russian cooperation will not cost the U.S. taxpayer one penny more - in fact I believe it will save us billions."

GAO also stated that the $400 million contract with the Russian Space Agency should be counted against the $2 billion savings. Goldin said, "My personal view is the opportunity to use Mir to develop some of our own operational procedures and to test hardware in the real space environment could save us billions in the long run. As our problems with the Intelsat satellite capture and repair mission proved, there's no place like space to test out your equipment before you commit it to flight.

"The Russians bring flight-proven hardware to the program, and they have vastly more experience in long duration flight than the U.S., which will be of tremendous benefit to the International Space Station partnership," said Goldin. "They have operated seven space stations and have three times (27 man-years) the experience on orbit compared to the U.S."

Goldin added, "While there are tangible benefits to Russian cooperation, which the GAO report fairly and accurately points out, auditors cannot put a price tag on the intangible benefits of international cooperation. It's good foreign policy, and it's good space policy. The Cold War is over, and cooperation with the Russians demonstrates that former adversaries can join forces in a peaceful pursuit which will generate tremendous benefits for both nations."

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NASA News

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AC 713 483-5111

For Release

Donald Savage
Headquarters, Washington, D.C.
(Phone: 202/358-1547)

June 27, 1994

James H. Wilson
Jet Propulsion Laboratory, Pasadena, Calif.
(Phone: 818/354-5011)

NOTE TO EDITORS: N94-047

NEW GALILEO ASTEROID MOON IMAGES AVAILABLE

The highest-resolution images of the recently discovered moon of the asteroid Ida have been released by NASA. The pictures were taken by NASA's Galileo spacecraft as it flew by the asteroid on August 28, 1993, and were played back by the spacecraft in early June 1994.

The images include a higher-resolution version of a picture of the asteroid moon released in March 1994. The illuminated and dark parts of the moon are shown in separate pictures.

Black and white images are available to news media from NASA's Broadcast and Imaging Branch. To obtain images, please fax your request to the Branch at 202/358-4333. The photo numbers are: H-94-181 and H-94-182.

The images also are available to the general public via Internet. Using the World Wide Web system, they may be accessed at the address: http://www.jpl.nasa.gov. They also are available via anonymous file transfer protocol (ftp) to the address jplinfo.jpl.nasa.gov. Users with a computer and modem may call 818/354-1333.

- end -

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Donald Savage
Headquarters, Washington, D.C.
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Diane Ainsworth
Jet Propulsion Laboratory, Pasadena, Calif.
(Phone: 818/354-5011)

For Release:

June 27, 1994

RELEASE: 94-104

ULYSSES STARTS PRIMARY MISSION AT SUN

The Ulysses spacecraft became the first robotic exploration vehicle in history to reach a polar region of the Sun when it passed over the Sun's southern polar area June 26 after a journey of almost 4 years from Earth.

The spacecraft, built by the European Space Agency (ESA), will now climb to a position 70 degrees south of the Sun's equator to begin a 4-month study of the complex force at work in the polar region. Ulysses was deployed from the Space Shuttle Discovery in October 1990. In February 1992, Ulysses spent nearly 11 days exploring unknown regions of Jupiter before gaining enough momentum to loop out of the ecliptic and on an orbit that passes over the poles of the Sun.

Scientists are elated to be able, finally, to carry out observations in the Sun's polar regions, said U.S. Project Scientist Dr. Edward J. Smith of NASA's Jet Propulsion Laboratory (JPL), Pasadena, Calif. "We have been like explorers confined to travel near the Earth's equator without being able to journey to the arctic regions."

"For a long time, we have suspected that much of the solar phenomena studied at, and near, the Earth was controlled by conditions in the Sun's polar regions," added Dr. Richard G. Marsden, ESA project scientist. "But never before have we been able to observe those processes."

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The lack of knowledge about these vital regions of the Sun has resulted in large part from the limited view that Earth-based instruments or spacecraft orbiting the Earth have had of the Sun. In addition, many complex solar phenomena cannot be observed remotely, but require direct measurements. The advance of space technology has made it possible in the last few decades to send proper instrumented robotic spacecraft such as Ulysses to previously inaccessible regions to make those direct measurements.

The polar regions of the Sun -- although mysterious in many ways -- have long captivated scientists' interest.

"The existence of a global magnetic field means that the Sun has magnetic poles much like the Earth," Smith said. "However, the properties of the polar magnetic fields, which switch polarity every 11 years in conjunction with the sunspot cycle, are poorly understood. Nevertheless, their existence introduces a basic north-south asymmetry into the solar atmosphere and space surrounding the Sun."

A better understanding of the Sun's magnetic field will be important, the scientists contended, because magnetic fields play a key role in the physics of the Sun's outer atmosphere -- called the corona -- and its extension outward into space as the so-called solar wind.

"The characteristic structure of the corona is imposed by the Sun's magnetic field," Smith said. "Furthermore, the source of the heat which creates the corona is unknown, but it is generally believed to be energy originally stored in the Sun's twisted and irregular magnetic fields."

Whatever the heat source may be, scientists think the corona is generally too hot to be restrained by even the massive gravity field of the Sun. Unless the magnetic field can hold back the coronal gas, that gas flows outward into space as the solar wind picks up speed. The solar wind is known to reach velocities of about a million miles per hour.

On the other hand, Smith added, if magnetic fields are directed outward from the Sun, they can channel the flow and assist in the escape and acceleration of the coronal gas. Coronal holes, regions of the corona which appear to be dark compared to the rest of the corona, are known sources of the solar wind.

Although these general observations are clear, many details remain obscure and will become the focus of Ulysses measurements, Smith added.

For instance, in the Sun's polar caps, the magnetic field extends outward through semi-permanent, very large coronal holes. By virtue of being directly above these sources and in the absence of complications introduced by the Sun's rotation, Ulysses is expected to contribute significant new knowledge about the escape and acceleration of the solar wind and, possibly, about the heating of the corona itself.

The magnetic field also exerts a crucial influence on matter arriving in the vicinity of the Sun from the Milky Way galaxy and, in particular, from the nearby interstellar medium.

Incoming cosmic rays, the nuclei of atoms traveling at nearly the speed of light, are subject to forces exerted by the Sun's magnetic field and its superimposed irregularities. The structure of the Sun's magnetic field is thought to favor entry of the cosmic rays by way of the polar regions.

Two questions of scientific importance, Smith noted, are the extent to which the galactic cosmic rays observed at Earth use this route, and the ways in which their properties are modified as a consequence.

"We hope to gain more knowledge of the intensity and properties of the cosmic rays far from the Sun, something that is presently unknown," Smith said. "The Ulysses mission will be able to shed new light on these long-standing riddles, as the instruments on board simultaneously measure the magnetic field and the properties of the solar wind and the cosmic rays."

The Ulysses mission is managed jointly by the European Space Agency and NASA to study the regions over the Sun's poles. JPL oversees the U.S. portion of the mission for NASA's Office of Space Science, Washington, D.C.

- end -

NOTE TO EDITORS: A video tape illustrating this news release is available to news media representatives by faxing the Broadcast and Imaging Branch on 202/358-4333.

NASA News

National Aeronautics and
Space Administration
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Donald Savage
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Jim Doyle
Jet Propulsion Laboratory, Pasadena, Calif.
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For Release:

June 28, 1994

RELEASE: 94-105

VENUS STILL GEOLOGICALLY ACTIVE, MAGELLAN FINDS

The planet Venus is still geologically active in places, even though radar images of its surface indicate that little has changed in the past half-billion years, a scientist working on data from NASA's Magellan mission has found.

Dr. Suzanne Smrekar, a geophysicist at NASA's Jet Propulsion Laboratory (JPL), Pasadena, Calif., said her studies, based on Magellan spacecraft altimetry and gravity data, suggest that there are at least two, and possibly more, active hot spots on Venus.

Her paper, entitled "Evidence for Active Hotspots on Venus from Analysis of Magellan Gravity Data," is to be published later this year in the science publication, Icarus. Smrekar earlier presented her findings before a meeting of the Lunar and Planetary Science conference in Houston, Texas.

The Magellan spacecraft went into orbit around Venus in August of 1990 and over the next 2 years mapped about 98 percent of the planet's surface with imaging radar. It then began to gather gravity data to help scientists develop a model of the planet's interior.

Gravity is measured using only the spacecraft's radio signal. This technique allows ground controllers to measure the spacecraft's speed in orbit as it increases in velocity over regions of high density or slows down over regions of lesser density.Magellan's altimetry instrument measured the height of features on the surface of the planet.

- more -

The gravity data showed evidence of "top loading" and "bottom loading" at several locations, Smrekar said. Top loading is evidence of a large mass, such as a mountain or volcano, pushing down on the crustal plate. At hot spots, bottom loading indicates an upwelling of less dense and, therefore, hotter material beneath the surface.

"The matter rises and is pushed upward because it is hot and thus less dense," she said. "As it nears the surface, it produces volcanism." The mechanisms are similar to those which occur on Earth and which produce volcanoes like those on Hawaii.

Earlier data from the spacecraft's imaging radar showed that much of the surface of Venus had been covered in the past by lava flows.

Smrekar said two regions on Venus -- Atla Regio and Bell Regio -- exhibited clear signatures of both bottom and top loading of the elastic surface.

The signatures from the data are indicative of an active hot spot at Atla Regio, Smrekar said. Although the loading response is less clear, the data from Western Eistla and Beta Regio also support the interpretation that those areas are underlain by large, hot areas, probably due to active plumes in the mantle beneath the planet's crust.

At Bell Regio, Smrekar found indications of a late, possibly inactive, evolutionary stage of a low-density layer that is no longer very hot.

"These early results from a survey of four major volcanic swells on Venus reveal hot spots in different stages of evolution," Smrekar noted in her paper. "Analysis confirms that the Beta, Atla and Western Eistla regions are active hot spots."

Smrekar said future studies of those areas and other possible hot spots on Venus would continue to improve scientists' understanding of the evolution of hot spots on both Venus and Earth.

Her work at JPL was done under contract to NASA's Office of Space Science, Washington, D.C.

- end -

NOTE TO EDITORS : A four-part image depicting gravity results at Venus is available by faxing your request to the Headquarters Broadcast and Imaging Branch on 202/358-4333. The photo numbers are: B & W: 94-H-179; Color: 94-HC-167.

NASA News

National Aeronautics and
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For Release

James Hartsfield
RELEASE: 94-043

June 30, 1994

FLIGHT CONTROL OF STS-65

Flight control for STS-65, the 17th flight of Columbia, will follow the procedures and traditions common to U.S. manned space flights since 1965, when the Mission Control Center (MCC) was first used.

The responsibility for Shuttle operations will revert to the MCC, Houston, once Columbia's two solid rocket boosters ignite. Mission support in the MCC will begin 5 hours prior to launch and continue through landing.

The primary objective of STS-65 is the around-the-clock operation of the second International Microgravity Laboratory (IML-2). Operations of IML-2 will be controlled from the Payload Operations Control Center at the Marshall Space Flight Center in Huntsville, Al., from the time that the laboratory's experiments are activated until they are powered off at the end of the flight.

The Space Shuttle orbiter's operations will be conducted from Flight Control Room One (FCR-1) on the second floor of the MCC, located in Bldg. 30 at the Johnson Space Center. Voice communications with the Orbiter will be as standard from the MCC using the call signs "Houston" and "Columbia." Voice communications will occur from the Payload Operations Control Center simultaneously as well between the Crew Interface Coordinator (CIC) and the IML-2 crew. Those communications, which are planned to occur simultaneously with Orbiter-MCC communications, will use the call signs "Spacelab" and "Huntsville."

The teams of MCC flight controllers will alternate shifts in the control center and in nearby analysis and support facilities. The handover between each team takes about an hour and allows each flight controller to brief his or her replacement on developments during the previous two shifts.

-more-

The MCC flight control teams for this mission will be referred to as the Ascent/Entry Team, the Orbit 1 Team, Orbit 2 Team, Orbit 3 Team and Orbit 4 Team, a team that will alternate times on console to provide a break for the other teams at various times during the 2-week mission. The Ascent/Entry Teams and the Orbit 1 Team will be led by Flight Director Jeff Bantle. The Orbit 2 shift will be conducted by Lead STS-65 Flight Director Milt Heflin. The Orbit 3 Team will be led by Flight Director Bob Castle and the Orbit 4 Team will be led by Flight Director Phil Engelauf.

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MCC POSITIONS AND CALL SIGNS FOR STS-65

The flight control positions in the MCC, and their responsibilities, are:

Flight Director (FLIGHT)

Has overall responsibility for the conduct of the mission.

Spacecraft Communicator (CAPCOM)

By tradition an astronaut; responsible for all voice contact with the flight crew.

Flight Activities Officer (FAO)

Responsible for procedures and crew timelines; provides expertise on flight documentation and checklists; prepares messages and maintains all teleprinter and/or Text and Graphics System traffic to the vehicle.

Integrated Communications Officer (INCO)

Responsible for all Orbiter data, voice and video communications systems; monitors the telemetry link between the vehicle and the ground; oversees the uplink command and control processes.

Flight Dynamics Officer (FDO)

Responsible for monitoring vehicle performance during the powered flight phase and assessing abort modes; calculating orbital maneuvers and resulting trajectories; and monitoring vehicle flight profile and energy levels during reentry.

Trajectory Officer (TRAJECTORY)

Also known as "TRAJ," this operator aids the FDO during dynamic flight phases and is responsible for maintaining the trajectory processors in the MCC and for trajectory inputs made to the Mission Operations Computer.

Guidance, Navigation & Control Systems Engineer (GNC)

Responsible for all inertial navigational systems hardware such as star trackers, radar altimeters and the inertial measurement units; monitors radio navigation and digital autopilot hardware systems.

Guidance & Procedures Officer (GPO)

Responsible for the onboard navigation software and for maintenance of the Orbiter's navigation state, known as the state vector. Also responsible for monitoring crew vehicle control during ascent, entry, or rendezvous.

Rendezvous Guidance and Procedures Officer (RENDEZVOUS)

The RENDEZVOUS GPO is specialist who monitors onboard navigation of the Orbiter during rendezvous and proximity operations.

Environmental Engineer & Consumables Manager (EECOM)

Responsible for all life support systems, cabin pressure, thermal control and supply and waste water management; manages consumables such as oxygen and hydrogen.

Electrical Generation and Illumination Officer (EGIL)

Responsible for power management, fuel cell operation, vehicle lighting and the master caution and warning system.

Payloads Officer (PAYLOADS)

Coordinates all payload activities; serves as principal interface with remote payload operations facilities.

Data Processing Systems Engineer (DPS)

Responsible for all onboard mass memory and data processing hardware; monitors primary and backup flight software systems; manages operating routines and multi-computer configurations.

Propulsion Engineer (PROP)

Manages the reaction control and orbital maneuvering thrusters during all phases of flight; monitors fuel usage and storage tank status; calculates optimal sequences for thruster firings.

Booster Systems Engineer (BOOSTER)

Monitors main engine and solid rocket booster performance during ascent phase.

Ground Controller (GC)

Coordinates operation of ground stations and other elements of worldwide space tracking and data network; responsible for MCC computer support and displays.

Maintenance, Mechanical, Arm & Crew Systems (MMACS)

Formerly known as RMU; responsible for remote manipulator system; monitors auxiliary power units and hydraulic systems; manages payload bay and vent door operations.

Extravehicular Activities (EVA)

A specialist responsible for monitoring and coordinating preparations for and execution of space walks. Responsibilities include monitoring suit and EVA hardware performance when applicable.

Payload Deployment & Retrieval Systems (PDRS)

A specialist responsible for monitoring and coordinating the operation of the remote manipulator system when it is carried aboard the Orbiter.

Flight Surgeon (SURGEON)

Monitors health of flight crew; provides procedures and guidance on all health-related matters.

Public Affairs Officer (PAO)

Provides real-time explanation of mission events during all phases of flight.

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STS-65 FLIGHT CONTROL TEAM STAFFING

POSITION	ASCENT/ENTRY	ORBIT 1	ORBIT 2	ORBIT 3/ ORBIT 4
FLIGHT	Jeff Bantle	Jeff Bantle	Milt Heflin	Bob Castle/ Phil Engelauf
CAPCOM	Charlie Precourt	Mario Runco	Bill McArthur	Marc Garneau/ Dave Wolf-Story Musgrave
PAO	James Hartsfield (A) Kyle Herring (E)	Kyle Herring	Kari Fluegel	Kelly Humphries
FAO	Clare Kingsford	Clare Kingsford	John Tolle	Greg Smith/ Tracy Calhoun
INCO	Chris Counts	Chris Counts	Richard LaBrode	Gary Horlacher/ Allen Morrison
FDO	Carson Sparks (A) Keith Fletcher (E)	Richard Theis	Bill Tracy	Bill Britz/ Dan Adamo
TRAJ	Deborah Kessler (A) Roger Simpson (E)	Roger Simpson	Lisa Shore	Robert Stein/ Pamela McCraw
GPO	Dennis Bentley (A) Glenn Pogue (E)	N/A	N/A	N/A
GNC	Ken Bain	Ken Bain	Ed Trlica	Jeff Davis/ Stanley Schaeffer

EECOM	Leonard Riche	Leonard Riche	Quinn Carelock	Jimmy Spivey/ Kathy Messersmith
EGIL	Benjamin Pawlik	Larry Minter	Ray Miessler	Jim Azbell
PAYLOADS	Rebecca Swanson	Rebecca Swanson	Kenneth Edwards	Timothy Baum/ Joseph Cavallaro
DPS	Gloria Araiza Young	Gloria Araiza Young	Jeffrey Wyrick	Terry Keeler/ Robert Walton
PROP	Bill Powers	Robbie Gest	Larry Schmitt	Thomas Lazo/ Nantel Suzuki
BOOSTER	John Calhoun (A) Jon Reding (E)	N/A	N/A	Franklin Markle
GC	Chuck Capps Johnnie Brothers	John Snyder Frank Stolarski	Terry Quick Melissa Blizzard	Mike Marsh/ Ed Klein
MMACS	Karl Pohl	Karl Pohl	Bill Anderson	Ladessa Hicks/ Robert Doremus
EVA	N/A	N/A	N/A	N/A
PDRS	N/A	N/A	N/A	N/A

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NASA News

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For Release:

Sarah Keegan
Headquarters, Washington D.C.
(Phone: 202/358-1547)

June 30, 1994

Jim Elliott
Goddard Space Flight Center, Greenbelt, Md.
(Phone: 301/286-6256)

RELEASE: 94-107

HUBBLE TECHNOLOGY CONTRIBUTES TO IMPROVED BREAST BIOPSIES

A new, non-surgical and much less traumatic breast biopsy technique, based on technology developed for NASA's Hubble Space Telescope, is now saving women time, pain, scarring, radiation exposure and money, according to NASA officials.

Radiologists predict that the new technique -- known as stereotactic large-core needle biopsy -- will reduce national health care costs by approximately $1 billion annually. The new technique is replacing surgical biopsy as the technique of choice, in many cases. Performed with a needle instead of a scalpel, it leaves a small puncture wound rather than a large scar. The patient is conscious under local anesthesia compared to being unconscious in surgery.

The new technique involves a NASA-driven improvement to the digital imaging technology known as a Charge Coupled Device or CCD. CCDs are high tech silicon chips which, unlike photographic film, convert light directly into an electronic or digital image. This image can be manipulated and enhanced by computers. For the last ten years, CCDs have been almost routinely used to observe stars, galaxies, and other astronomical objects in visible and ultraviolet light.

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In the breast imaging system, a special phosphor enables the new CCD to convert X-rays to visible light, allowing the system to "see" with X-ray vision. The thinned and highly sensitive CCD -- which was not commercially available prior to Hubble's development -- is now leading the field of digital breast imaging technology, according to medical specialists.

"The woman who has gone through a needle localization procedure and formal surgical biopsy on a prior occasion and now comes in to have the same thing done, but has it done as a stereotactic biopsy, is about the most appreciative patient you can imagine, because you've taken a long, drawn-out, anxiety-ridden and expensive event and made it shorter, easier to schedule, more comfortable. She has no surgical wound," explained Dr. David Dershaw, Director of Breast Imaging at Memorial Sloan-Kettering Cancer Center in New York. (His comments are in patient information materials of the LORAD Corp., Danbury, Conn., which produces breast imaging equipment.)

The technology breakthrough came when scientists at NASA's Goddard Space Flight Center, Greenbelt, Md., developing the Space Telescope Imaging Spectrograph (STIS) -- due to be installed on Hubble in1997 -- realized that existing CCD technology could not meet the instrument's demanding scientific requirements.

NASA contracted with Scientific Imaging Technologies, Inc., (SITe), of Beaverton, Ore., to develop a more sensitive CCD and lower manufacturing costs. After meeting NASA's rigorous scientific and spaceflight requirements, the company then applied its new knowledge to manufacturing CCDs for the digital spot mammography market. The result is a device that images suspicious breast tissue more clearly and efficiently than is possible with conventional X-ray film screen technology. What made the transfer of knowledge possible was the common imaging requirements of both astronomy and mammography: high resolution to see fine details, wide dynamic range to capture in a single image structures spanning many levels of brightness, and low light sensitivity to shorten exposures and reduce X-ray dosage.

SITe's CCD for digital breast imaging is virtually identical to the CCD developed for Hubble, said William Stephens, Chief Executive Officer of SITe. Approximately 350 digital breast imaging units containing SITe's thinned CCD already are in use, said Anne Smith, Marketing and Communications Manager for the LORAD Corp., which uses the STIS-like CCDs in its breast imaging equipment, and many more are on order. Currently, digital breast imaging is most often associated with stereotactic biopsies, but by mid-1995, full digital breast units should be available for routine mammographies.

In the new non-surgical technique, the CCD is part of a digital camera system that "sees" the suspicious breast tissue. A needle extracts the tissue. The patient lies face down with one breast protruding through an opening in a specially designed table. The imaging device and needle are mounted under the table.

The radiologist locates the suspected abnormality with the stereotactic X-ray imaging device by taking images of the suspected mass from two different angles. The computer finds the coordinates of the abnormality based on those two images, and the radiologist extracts a tiny sample of it with the needle. The tiny puncture wound is covered with a small bandage, and the patient can walk out of the office minutes after the procedure and resume normal activities.

More than 500,000 American women undergo breast biopsies each year. While 80 percent of the suspicious masses are benign, this cannot be determined without a biopsy. The traditional surgical technique involves running a guide wire into the breast to pinpoint the mass, surgically following the wire and digging into the breast to extract a tissue sample. With the traditional surgical biopsy, recuperation is about one week and involves a significant amount of pain, suturing and scarring, doctors say.

Although stereotactic location is also possible with X-ray film technique, radiologists say the new digital imaging device exposes patients to only half the radiation of the conventional X-ray film method. Unlike the X-ray film method, which radiates the entire breast, digital imaging exposes only a small portion of the breast to radiation. Also unlike X-ray film, which holds "frozen" pictures, digital images can be computer-enhanced to sharpen details. No film or plates must be processed, allowing patients to be evaluated in near real time.

"In addition to exposing patients to about half the radiation, digital breast imaging also approaches real time, cutting down procedure time by one-half to one-third," said Dr. Dershaw. "It's more cost effective."

Studies show that the new procedure is just as effective as traditional surgery. While traditional surgery costs about $3,500, core biopsy runs about $850. Sampling suspicious tissue now can be done in a radiologist's office.

The digital images, which are stored on computer disks, may be downloaded instantly to distant experts via computer networks, cellular signals or satellites, Stephens said. The digital image acquisition is almost foolproof, he explained, virtually eliminating re-takes and additional radiation exposure.

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"The image quality is much better because the signal-to-noise ratio is better with CCDs," explained Dr. Hans Roehrig, Research Professor of Radiology and Optical Science at the University of Arizona. "You don't get the granularity that you do with X-ray film, which causes the signal-to-noise ratio of the film to be poor."

"Stereotactic biopsies also were done before the advent of the thinned CCDs, but they took a long time," said Dr. Roehrig. "First, two X-ray pictures of the abnormality had to be taken. The pictures had to be developed in the darkroom, which takes about three minutes. Then, measurements had to be taken on the film images and run through a computer in order to perform triangulation to determine the coordinates [of the suspected abnormality]. The process of taking pictures, developing the film and locating the coordinates of the abnormal tissue mass typically takes about fifteen to twenty minutes, and during this whole time, the patient -- still at the machine -- cannot move. Now, in near real time, the entire process of locating the mass can take as little as five minutes and is much more comfortable for the patient."

The new biopsy technique, made possible by the CCDs developed for Hubble Space Telescope, will spare millions of women pain, scars and radiation exposure, will lead to much faster recuperation and will save billions in health care costs.

-end-

NOTE TO EDITORS: Color and B&W images are available to news media from NASA's Broadcast and Imaging Branch. To obtain images, please fax your request to the Branch at 202/358-4333. The photo numbers for the color images are 94-HC-168 and 94-HC-169; and for the B&W images, the numbers are 94-H-180 and 94-H-183.

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For Release

July 1, 1994

RELEASE: 94-108

ARNOLD ALDRICH RETIRES

Arnold D. Aldrich, NASA Associate Administrator for Space Systems Development, is retiring effective July 3, after 35-years of service to the Agency.

Aldrich joined NASA in 1959 and held a number of significant flight operations and project management positions at the Johnson Space Center and its predecessor organizations during the Mercury, Gemini, Apollo, Skylab, Apollo-Soyuz and Space Shuttle programs.

In 1986 he was named Director of the National Space Transportation System (Space Shuttle Program) in Washington where he led the entire range of recovery activities required to return the Shuttle fleet to flight following the Challenger accident. He subsequently served as Associate Administrator for Aeronautics, Exploration and Technology, where he provided leadership for advancement of technologies for civil aviation, military aviation and for future space missions.

In his current assignment, Aldrich has led a number of NASA's large space flight system programs including Space Station Freedom, the Advanced Solid Rocket Motor and the National Launch System. He also has directed a wide range of advanced programs in support of future space flight requirements and was the architect and Program Manager of the first contract between NASA and an organization in the Russian Federation.

Mr. Aldrich is a Fellow of the American Institute of Aeronautics and Astronautics, a Fellow of the American Astronautical Society and a corresponding member of the International Academy of Astronautics. He has earned numerous honors including the

-more-

Presidential Rank of Distinguished Executive, the Presidential Rank of Meritorious Executive (twice), the NASA Distinguished Service Medal (three times), the Northeastern University Outstanding Alumni Award, the Arthur S. Fleming Award, the NASA Outstanding Leadership Medal, the VFW Aviation and Space Award, the AIAA Space Systems Award and the NASA Exceptional Service Award.

Following his retirement from NASA, Mr. Aldrich will join the Lockheed Missiles and Space Company, Sunnyvale, Calif., as a vice president for commercial space programs.

- end -

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For Release:

Kyle Herring
RELEASE: 94-044

July 6, 1994

SHUTTLE ASTRONAUT RICHARD COVEY TO LEAVE NASA, AIR FORCE

Richard O. Covey (Colonel, USAF), a veteran of four Space Shuttle flights, including last year's mission to service the Hubble Space Telescope, will leave NASA effective July 11 and retire from the U.S. Air Force on August 1.

After 16 years with NASA as an astronaut, Covey is joining Calspan Services Contracts Division, an operating unit of Space Industries International, Inc., as Director of Business Development in Houston.

Selected as a member of the astronaut class of 1978, Covey has flown four times on the Shuttle. He flew twice aboard Discovery on STS 51-I and STS-26, once on the STS-38 mission of Atlantis, and Endeavour's STS-61 flight.

Prior to his first flight, Covey provided astronaut support in Orbiter engineering development and testing. He was a T-38 chase pilot for the second and third Shuttle flights, and served as a spacecraft communicator (CAPCOM) in Mission Control during several other missions.

His first Shuttle flight (STS 51-I) was in August 1985 and included deployment of three communications satellites and the retrieval, repair and redeployment of another. Covey's second mission (STS-26) in September 1988 was the first following the Challenger accident and included deployment of a NASA communications satellite. The STS-38 mission was a dedicated Department of Defense flight in November 1990 and was Covey's third spaceflight.

Covey most recently commanded the STS-61 mission in December 1993 which included five spacewalks to service and repair the Hubble Space Telescope for the first time.

"Dick's dedication to this nation's space effort is an asset we will miss," said David C. Leestma, director of Flight Crew Operations at the Johnson Space Center. "Since being selected as part of the first group of astronauts chosen for the Space Shuttle program in 1978, Dick has proven his worth to the aerospace community with near unparalleled leadership and will no doubt succeed in all of his future endeavors."

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Covey has flown more than 30 different types of aircraft accumulating over 5,700 hours of flight time. Between 1970 and 1974, he was an operational fighter pilot flying F-100, A-37 and the A-7D. He flew 339 combat missions during two tours in Southeast Asia. Prior to being selected as an astronaut, Covey was an F-4 and A-7D weapons system test pilot and joint test force director for electronic warfare testing of the F-15 Eagle at Eglin Air Force Base in Florida between 1975 and 1978.

From Fort Walton Beach, Florida, Covey, 47, graduated from the U.S. Air Force Academy with a bachelor of science degree in engineering sciences and a major in astronautical engineering in 1968. He received a master of science degree in aeronautics and astronautics from Purdue University in 1969.

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For Release:

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July 7, 1994

NOTE TO EDITORS: N94-050

NEW HUBBLE IMAGES OF COMET SHOEMAKER-LEVY 9 AVAILABLE

Three recent images of Comet P/Shoemaker-Levy 9 and Jupiter taken by NASA's Hubble Space Telescope are available to news media representatives.

The first image is a "true color" picture of the planet Jupiter in detail surpassed only by images from spacecraft which traveled to the planet. The photo numbers are:
color: 94-HC-171 B&W: 94-H-185

The second image is the latest of Comet P/Shoemaker-Levy 9, taken on May 17, 1994, showing the train of 21 fragments stretched across 710 thousand miles of space. The photo numbers are: color: 94-HC-172 B&W: 94-H-186

The third image is a photo illustration assembled from separate images of Jupiter and Comet P/Shoemaker-Levy 9, showing the planet and comet in close proximity as it should appear shortly before the comet fragments begin impacting the giant planet July 16. One by one, the comet fragments will impact Jupiter during the week of July 16-22. The photo numbers are: color: 94-HC-170 B&W: 94-H-184

The first fragment, one of the smallest of the comet's fragments, will impact Jupiter just before 3 p.m. CDT, July 16, on the side of Jupiter facing away from Earth. Shortly afterwards, the point of impact will rotate into view as seen from Earth.

Because of its small size, most scientists do not expect to witness significant visible effects from the impact of the first fragment, nor to detect significant aftereffects in the planet's atmosphere. However, there is a greater possibility of detectable effects resulting

-more-

from the impacts of larger fragments later during the week. Some of the effects scientists will be looking for in the Jovian atmosphere are small changes in cloud structure as well as small changes in the temperature structure, which can be measured using infrared telescopes.

Media representatives can obtain the images by calling the NASA Headquarters Broadcast and Imaging Branch at 202/358-1900. Also, an updated listing of the comet fragment impact times and viewing locations is available by contacting the Newsroom at 202/358-1600.

- end -

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For Release:

July 8, 1994

Diane Ainsworth
Jet Propulsion Laboratory, Pasadena, Calif.
(Phone: 818/354-5011)

RELEASE: C94-z

MARS SURVEYOR UNDERWAY WITH CONTRACTOR SELECTION

Development of the Mars Global Surveyor -- the first in a series of low-cost missions to explore the Martian environment -- will begin this month, leading up to a November 1996 launch and America's return to the red planet.

Dr. Edward C. Stone, Director of NASA's Jet Propulsion Laboratory, Pasadena, Calif., today announced the selection of the contractor, Martin Marietta Technologies, Inc. (MMTI) of Denver, Colo., to build the light-weight orbiter after a rapid, industry-wide competition. "MMTI has a successful record of developing unique planetary spacecraft, including the highly successful Magellan Venus radar mapping mission, and the Viking Mars landers," Stone said.

"This is the beginning of a new era in the exploration of the Martian environment and a new way of conducting business with our partners in industry," Stone said. "We are now on the way to building a viable, state-of-the-art spacecraft that will be ready for launch by November 1996 and will assure us of many scientifically important results."

Mars Global Surveyor will be readied for launch from Cape Canaveral, Fla., in just 28 months, beginning NASA's decade-long plan to launch orbiters and landers to Mars every 26 months through the year 2005. The rigorous timeline -- trimmed from an average five years or more in the past -- reflects NASA's new policy of streamlining the development and deployment of new planetary missions.

- more -

Performance objectives for the new orbiter called for a low mass, polar-orbiting spacecraft that could carry all but two of the eight science instruments that were on board the Mars Observer spacecraft when it was lost on Aug. 21, 1993. Project costs through 30 days after launch have been capped at $155 million.

The Mars Global Surveyor will provide high-resolution global maps of the Martian surface, profile the planet's atmosphere and study the nature of the magnetic field. The orbiter will be small enough to be launched on a Delta expendable launch vehicle and will spend 10 months in transit to Mars before entering a polar orbit around the planet in September 1997.

The Jet Propulsion Laboratory will manage the Mars Global Surveyor mission for NASA's Office of Space Science, Washington, D.C.

- end -

NASA News

National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
Houston, Texas 77058
AC 713 483-5111

For Release:

David E. Steitz
Headquarters, Washington, D.C.
(Phone: 202/358-1730)

July 8, 1994

RELEASE: 94-111

15 ADDITIONAL 1994 PHASE ONE STTR SELECTIONS ANNOUNCED

NASA announced today that it will negotiate contracts to enable 15 small companies to fully develop innovative new high technology products they have proposed for application in the aerospace industry.

The announcement brings to 21 the number of projects that will be financed under the agency's Small Business Technology Transfer Program (STTR) which is managed by NASA's Office of Advanced Concepts and Technology.

The STTR program is similar to the Small Business Innovative Research program but varies by allowing universities, federal laboratories and non-profit organizations to apply in cooperation with small business partners. The STTR program also is more directly aimed at private sector commercialization activities.

The 21 contracts are known as Phase I contracts which focus on product development. Success in Phase I will lead to Phase II which is geared toward product commercialization. The Phase II award process allows for two-year, fixed price contracts up to $500,000.

The 1994 Phase I solicitation closed on March 3, 1994. One hundred fifty-nine separate proposals were received from 137 small, high technology businesses in conjunction with universities from all sections of the United States in response to the three topics in the solicitation.

Experts from NASA's Goddard Space Flight Center, Greenbelt, Md., and Langley Research Center, Hampton, Va., academia, and commercial businesses reviewed the proposals for technical merit and commercial potential. Each of the fifteen selected proposals in this round will be awarded fixed-price contracts valued at up to $100,000 with 12 months to complete the Phase I projects.

A listing of the fifteen selected research proposals by firm name, address, and proposal number may be obtained by calling the NASA Headquarters Newsroom at (202/358-1600).

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National Aeronautics and Space Administration

Small Business Technology Transfer (STTR) Program

Proposals Selected for Negotiation of STTR Phase I Contracts

Sorted by Company and Proposal Number

July, 1994

AEROMOVER SYSTEMS CORP
2500 BISHOP CIRCLE
DEXTER, MI 48130
RONALD A. MEYER 313-426-2376
THE UNIVERSITY OF MICHIGAN
3003 SOUTH STATE ST
ANN ARBOR, MI 48109
94-03-940085 LaRC
DIFFERENTIATED UNIVERSAL END EFFECTOR

AIRBORNE RESEARCH ASSOCIATES
46 KENDAL COMMON RD
WESTON, MA 02193
RALPH J. MARKSON 617-899-1834
MASSACHUSETTS INSTITUTE OF TECHNOLOGY
244 WOOD ST
LEXINGTON, MA 02173
94-01-940092 LaRC
LASI: LIGHTNING AND STORM INTENSITY/WEATHER WARNING SYSTEM

AMHERST SYSTEMS INC
30 WILSON RD
BUFFALO, NY 14221
DONALD A. HESS 716-631-0610
STATE UNIVERSITY OF NEW YORK AT BUFFALO
3435 MAIN ST
BUFFALO, NY 14214
94-03-940104 LaRC
FOVEAL SENSOR AND IMAGE PROCESSOR PROTOTYPE

-more-

ARNAV SYSTEMS INC
16923 MERIDIAN EAST
PUYALLUP, WA 98373
FRANK WILLIAMS 206-848-6060
RESEARCH TRIANGLE INSTITUTE
525 BUTLER FARM RD SUITE 108
HAMPTON, VA 23666-1564
94-01-940024 LaRC
AN AFFORDABLE GENERAL AVIATION INTEGRATED COCKPIT DISPLAY SYSTEM

CIRRUS DESIGN CORP
4515 TAYLOR CIRCLE
DULUTH, MN 55811
DEAN VOGEL 218-727-2737
RESEARCH TRIANGLE INSTITUTE
3040 CORNWALLIS RD
RESEARCH TRIANGLE PARK, NC 27709
94-01-940152 LaRC
LOW COST AIRCRAFT ENGINE AND FLIGHT DATA RECORDING SYSTEM

CYBERNET SYSTEMS CORP
1919 GREEN RD, SUITE B-101
ANN ARBOR, MI 48105
HEIDI N. JACOBUS 313-668-2567
THE UNIVERSITY OF MICHIGAN COLLEGE OF ENGINEERING
OFFICE OF TECHNOLOGY TRANSFER 2901 HUBBARD
ANN ARBOR, MI 48109-2106
94-01-940060 LaRC
A LOW-COST HIGH-PERFORMANCE VISUAL-AUDITORY-TACTILE VIRTUAL REALITY TRAINER

ENDOROBOTICS CORP
5 DEERWOOD TRAIL P.O. BOX 4408
WARREN, NJ 07059
DANIEL AHN 908-271-9088
UNIVERSITY OF CALIFORNIA BERKELEY REGENTS UNIVERSITY
336 SPROUL HALL, UNIVERSITY OF CALIFORNIA BERKELEY
BERKELEY, CA 94720
94-03-940029 LaRC
MILLI-ROBOTS FOR SURGICAL TELEOPERATION

INTEGRINAUTICS CORP
P.O. BOX 9475
STANFORD, CA 94309
CLARK E. COHEN 415-725-4124
STANFORD UNIVERSITY
DEPARTMENT OF AERONAUTICS AND ASTRONAUTICS
STANFORD, CA 94305-4085
94-01-940048 LaRC
HIGH INTEGRITY PRECISION LANDING FOR GENERAL AVIATION USING THE GLOBAL POSITIONING SYSTEM

KNOWLEDGE BASED SYSTEMS INC
1408 UNIVERSITY DR EAST
COLLEGE STATION, TX 77840-2335
PAULA S. DEWITTE 409-260-5274
TEXAS ENGINEERING EXPERIMENT STATION
TEXAS A&M UNIVERSITY
COLLEGE STATION, TX 77843
94-01-940055 LaRC
GENERAL AVIATION PILOT ADVISORY AND TRAINING SYSTEM (GAPATS)

MID-SOUTH ENGINEERING INC
P.O. BOX 128015
NASHVILLE, TN 37212
ROBERT JOEL BARNETT 515-383-8877
TENNESSEE STATE UNIVERSITY
3500 JOHN A. MERRITT BLVD
NASHVILLE, TN 37209
94-03-940020 LaRC
SPHERICAL MOTOR AND NEURAL CONTROLLER FOR MICRO-PRECISON ROBOT WRIST

QUALITY INFORMATION SYSTEMS INC
10680 WEST PICO BLVD SUITE 260
LOS ANGELES, CA 90064
JOEL FLEISS 310-287-0728
UNIVERSITY CALIFORNIA AT LOS ANGELES
4732 BOELTER HALL
LOS ANGELES, CA 90024-1596
94-02-940011 GSFC
ELECTRONIC INTERACTIVE DOCUMENT CHANGE REQUESTS

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ROBOTICS RESEARCH CORP
P.O. BOX 206
AMELIA, OH 45102
JAMES P. KARLEN 513-831-9570
JET PROPULSION LABORATORY
4800 OAK GROVE DR
PASADENA, CA 91109
94-03-940120 LaRC
NEXT GENERATION CONTROLLER FOR REDUNDANT ROBOTS

SEAGULL TECHNOLOGY INC
1310 HOLLENBECK AVE
SUNNYVALE, CA 94087
JOHN A. SORENSEN 408-732-9620
STANFORD UNIVERSITY
AERONAUTICS & ASTRONAUTICS DEPARTMENT
STANFORD, CA 94305
94-01-940108 LaRC
GPS-BASED ATTITUDE AND VELOCITY ESTIMATION SYSTEM

TRANSITIONS RESEARCH CORP
SHELTER ROCK LN
DANBURY, CT 06810-8159
JOHN M. EVANS JR. 203-798-8988
UNIVERSITY OF SOUTHERN CALIFORNIA
COMPUTER SCIENCE DEPARTMENT MAIL CODE 0781
LOS ANGELES, CA 90089-0781
94-03-940151 LaRC
COMBINED DISTANCE AND ORIENTATION SENSOR (CODOS)

VISUAL INSPECTION TECHNOLOGIES INC
27-2 IRONIA RD
FLANDERS, NJ 07836-9124
WILLIAM R. SIGRIST 201-927-0033
SRI INTERNATIONAL
333 RAVENSWOOD AVE
MENLO PARK, CA 94025
94-03-940097 LaRC
MOBILE MAGNETIC ROBOTS FOR INSPECTION OF STEEL STRUCTURES

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For Release:

Donald L. Savage
Headquarters, Washington, D.C.
(Phone: 202/358-1547)

July 8, 1994

Keith Kohler
Wallops Flight Facility, Wallops Island, Va.
(Phone: 804/824-1579)

RELEASE: 94-113

NASA SELECTS PARTICIPANTS FOR STUDENT LAUNCH PROGRAM

NASA has selected two Space Grant Consortiums and two universities to participate in the Student Launch Program. This program will provide undergraduate students hands-on education with the opportunity to fly space and Earth science experiments on suborbital sounding rockets and scientific balloons.

The purpose of the program is to provide undergraduate students with an opportunity to gain experience in all aspects of suborbital missions including planning, management, design, fabrication, payload testing, qualification, and field operations associated with experiments for spaceflight.

The program provides students with the opportunity to participate actively in carrying out spaceflight experiments, increasing their awareness of the complex nature of such activities and stimulating continued interest in pursuing careers in engineering and science. The program emphasizes participation by underrepresented student groups, including persons with disabilities.

The participants and their proposed projects are:

Virginia Space Grant Consortium

Hampton University, Old Dominion University and the College of William and Mary will work together on the Virginia Student Upper-Atmospheric Balloon Payload System. A 200,000 cubic feet (5,664 cubic meter) balloon will carry the Virginia payload to gather scientific data on atmospheric temperature and velocity fluctuation levels and data on atmospheric constituent gases.

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Colorado Space Grant Consortium

The consortium will fly an experiment called "Hands-On Education and Research of Ozone (HERO)" on a single-stage Orion sounding rocket. The experiment is designed to accurately measure the total atmospheric ozone over the rocket range; aid in the calibration of ozone satellites; and flight demonstrate advanced techniques for measuring total ozone on future satellites. Universities participating in the project include the University of Colorado at Boulder, the University of Southern Colorado, Fort Lewis College, Colorado State University, University of Colorado at Colorado Springs, Mesa State College and the U.S. Air Force Academy.

University of Pennsylvania

The University of Pennsylvania, with Lincoln University and Gettysburg College, will develop and fly a system for imaging star fields and detecting Cerenkov radiation generated by cosmic rays and pair-producing gamma rays in the upper atmosphere. This system also will fly on a 200,000 cubic feet balloon. This project is supported in part by the Delaware Space Grant Consortium.

University of Cincinnati

The university will fly its experiment on a two-stage Nike-Orion sounding rocket. The launch will carry an ultraviolet spectrometer to investigate absorption of solar energy by ozone, oxygen, and atomic oxygen in the lower thermosphere and mesosphere. The science objective is to determine the concentration of these gases from the spectroscopic measurements.

Through the Goddard Space Flight Center's Wallops Flight Facility, Wallops Island, Va., NASA will provide the rockets and balloons, launch services, technical consultation and guidance.

The participating institutions are responsible for funding the payload hardware and related activities such as fabrication, testing and travel. In addition, the universities will receive technical assistance from industry and other NASA centers.

The suborbital program offers students an opportunity to see projects through from inception to launch in a relatively short time. The flights are planned to be launched from the Wallops Flight Facility in 1995 and 1996.

The Student Launch Program is sponsored by the Office of Space Science, the Office of Human Resources and Education, and the Office of Equal Opportunity at NASA Headquarters, Washington, D.C.

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For Release:

Kyle Herring
RELEASE: 94-047

July 12, 1994

ASTRONAUT READDY TO REPLACE CAMERON AS NASA MANAGER IN RUSSIA

Astronaut William F. Readdy will replace Kenneth D. Cameron (Colonel, USMC) as NASA manager of operational activities at Star City, Russia. As Director of Operations, Russia, Readdy will work with Russian trainers, engineers and flight controllers to support the training of NASA astronauts at Gagarin Cosmonaut Training Center, Star City, and to enhance continued cooperation between NASA and Russia's Space Agency (RSA).

Readdy's primary responsibilities will include the support of U.S. astronauts and their families currently living in Star City. He also will monitor the current training program as well as develop a syllabus for Shuttle crews training to dock with the Mir space station. In addition, he will establish and maintain the operational relationships required to help develop plans and procedures which support the long-term, joint operations between NASA, RSA and Star City.

Readdy will join fellow astronauts Norman E. Thagard, M.D., and Bonnie J. Dunbar, Ph.D., who have been training in Star City since February as the prime and backup crew members for a 3-month flight aboard Mir. Thagard is scheduled to be launched aboard a Soyuz spacecraft March 1, 1995. Following his three-month stay on Mir, the crew of mission STS-71, which will include Dunbar as a mission specialist, will dock Space Shuttle Atlantis to Mir. It will be the first of up to 10 Shuttle visits that will be made to the Russian space station during the 1995-1997 time frame.

Readdy has flown on two Shuttle missions, STS-42 in January 1992 and STS-51 in September 1993 -- both aboard Discovery. On the STS-42 flight, Readdy participated in various scientific experiments carried out as part of the first International Microgravity

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Laboratory (IML-1) mission. As the pilot of STS-51, Readdy participated in the deployment of the Advanced Communications Technology Satellite (ACTS), and the deployment and retrieval of the Astro SPAS (Shuttle Pallet Satellite). He also helped supervise a seven-hour spacewalk designed to evaluate tools and techniques used during the Hubble Space Telescope servicing mission and on future space missions.

A Captain in the U.S. Naval Reserve, Readdy earned a bachelor of science degree in aeronautical engineering from the Naval Academy in 1974.

Cameron also has flown twice on the Shuttle. His first flight was on Atlantis' STS-37 mission in 1991 to deploy the Compton Gamma Ray Observatory. His second mission was on Discovery's STS-56 flight in 1993 to continue studies of the Earth's atmosphere as part of a series of missions called Atmospheric Laboratory for Applications and Science (ATLAS). Cameron will return to the Johnson Space Center in Houston, and is expected to command another Shuttle mission in the near future.

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For Release:

Laurie Boeder
Headquarters, Washington, D.C.
(Phone: 202/358-1898)

July 13, 1994

RELEASE: 94-116

WELCH NAMED NEWS CHIEF AT NASA HEADQUARTERS

Brian Welch, a veteran public affairs officer for the space agency, has been named Chief of News and Information at NASA Headquarters, Washington, D.C.

Welch began his NASA career as a public affairs cooperative education student at the Langley Research Center, Hampton, VA, in 1979. In 1981, he moved to the Johnson Space Center, Houston, TX, to become editor of the center newspaper, the Space News Roundup.

In 1984, he became a public affairs mission commentator, providing real-time descriptions from the Mission Control Center during Space Shuttle flights. He also served as manager of the JSC mission commentary team and as a newsroom manager at Johnson during Shuttle flights.

Most recently, he served as Deputy News Chief at the center. In 1993, he served a 10-month tour of duty at NASA Headquarters as speech writer for NASA Administrator Daniel S. Goldin.

Welch is a graduate of Murray State University, Murray, KY, and a native of Fulton, KY.

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NASA News

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For Release:

Debra J. Rahn
Headquarters, Washington, D.C.
(Phone: 202/358-1639)

July 18, 1994

RELEASE: 94-119

NASA AND UKRAINE SPACE AGENCY AGREE ON AREAS OF SPACE COOPERATION

NASA and the National Space Agency of Ukraine (NSAU) agreed July 13 to explore possible cooperation in remote sensing and Earth sciences, telemedicine, space biology, space welding, advanced concepts and technology, and student and scientist exchanges.

"These proposed activities are a significant first step in establishing U.S. and Ukrainian cooperation in space," said Robert W. Clarke, NASA Associate Administrator for Policy Coordination and International Relations. The activities follow discussions held between NASA Administrator Daniel S. Goldin and Ukrainian Deputy Prime Minister Valeriy Shmarov earlier this year.

Details of discussions that were held at NASA Headquarters, NASA's Goddard Space Flight Center, Greenbelt, Md., and the John F. Kennedy Space Center in Florida on July 6-15, 1994, included the following:

- **Remote Sensing and Earth Sciences**: Shuttle Imaging Radar (SIR-C) imagery of Ukraine: NASA has included a list of sites provided by NSAU as targets of opportunity for the August 1994 SIR-C Shuttle mission. NSAU will conduct airborne radar surveys of these sites during the mission.

- **Chernobyl Studies**: Discussions were held on a possible joint project to study the Chernobyl region using U.S. Landsat imagery and various Ukrainian data from ground measurements and from remote sensing platforms.

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- **Telemedicine**: Cooperation in this area may include computer connectivity, voice/fax, and videoconferencing capabilities for furthering medical science and medical education, as well as the clinical telemedicine capabilities required for patient examinations and evaluations in Ukraine and the United States.

- **Space Biology**: This may include data and scientist exchanges in flight- and ground-based research, biomedical research, flight hardware, access to space flight, unique ground facilities, science and technology application, and advanced life support.

- **Space welding**: A possible NASA/Ukraine Joint Flight Demonstration of the Ukrainian Universal Hand Tool (UHT) was discussed. If approved, NASA will lease the UHT from the Paton Institute, Kiev, Ukraine. The institute is a world leader in space welding technologies which could offer viable techniques for assembly and repair of large space structures.

  A flight demonstration project of the UHT could begin as early as October 1994 with an estimated flight date on the Space Shuttle planned for late 1997.

- **Advanced concepts and technology**: This includes exploring possible collaborative areas in advanced concepts and technology, especially in the areas of electrophoresis, protein crystal growth, organic separation, animal and plant productivity, environmental controls, agricultural biotechnology, and electron beam processing of metallic and semiconductor materials.

Clarke was the head of the U.S. Delegation and Valeriy G. Komarov, Deputy Director General, NSAU, was the head of the Ukrainian delegation.

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For Release:

Brian Welch
Headquarters, Washington, D.C.
(Phone: 202/358-1600)

July 20, 1994

RELEASE: 94-121

HEADQUARTERS NEWS DISTRIBUTION GOES ON-LINE JULY 25

Distribution of news releases and other informational materials from NASA Headquarters will take a giant leap into the Information Age starting Monday, July 25.

As of that date, Headquarters will no longer distribute news releases, contract announcements or notes-to-editors by mail. Use of electronic distribution services such as the Internet, Compuserve and Fax-on-Demand will become the primary means of informing the news media and the public about NASA activities and programs. Text-only versions of mission press kits also will be available via on-line services.

"We are excited by the possibilities inherent in this new way of doing business," said Geoffrey H. Vincent, Deputy Associate Administrator for Public Affairs and head of the Agency's public affairs Internet steering group. "Over time, this change will save the taxpayers hundreds of thousands of dollars and allow us to meet our customers' needs in a much more effective and efficient manner."

The changeover to electronic distribution of news material has been planned for almost a year, Vincent noted. "The Internet is quickly evolving, and we hope to evolve with it," he said. "In the years ahead, vast amounts of information on space exploration, from news releases to historical documents and photographs -- eventually even video -- will be available not just to reporters, but to teachers, students and anyone else who wishes to access it."

Use of the Internet to obtain information on space-related topics is one of the fastest growing aspects of the service, he added. "Since July 8, for example," Vincent said, "there have been more than 90,000 inquiries on a computer server at the Jet Propulsion Laboratory for information on the collision of Comet Shoemaker-Levy 9 with the planet Jupiter. This is just one example of the tremendous interest that exists, and the virtually unlimited possibilities of this new technology."

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Although the primary means of news distribution will be by on-line services, news media currently on the Headquarters distribution list will continue to receive news releases by fax. Press kits will continue to be sent by mail for the foreseeable future, but that practice ultimately will be phased out as technological advances permit.

ACCESS BY INTERNET

The NASA Headquarters Internet database will contain NASA news releases, mission press kits, contract announcements, notes-to-editors, fact sheets and other publications.

NASA press releases can be obtained automatically by sending an Internet electronic mail message to domo@hq.nasa.gov. In the body of the message (not the subject line) users should type the words "subscribe press-release" (no quotes). The system will reply with a confirmation via E-mail of each subscription. A second automatic message will include additional information on the service.

Informational materials also will be available from a data repository known as an anonymous FTP (File Transfer Protocol) server at ftp.pao.hq.nasa.gov under the directory /pub/pao. Users should log on with the user name "anonymous" (no quotes), then enter their E-mail address as the password. Within the /pub/pao directory there will be a "readme.txt" file explaining the directory structure.

ACCESS BY FAX

An additional service known as fax-on-demand will enable users to access NASA informational materials from their fax machines. Users calling (202) 358-3976 may follow a series of prompts and will automatically be faxed the most recent Headquarters news releases they request.

ACCESS BY COMPUSERVE

Users with Compuserve accounts can access NASA press releases by typing "GO NASA" (no quotes) and making a selection from the categories offered.

The Headquarters Newsroom also will operate an automated telephone system for users with problems accessing these information resources. The number is (202) 358-4043.

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For Release:

Ed Campion
Policy/Management
Headquarters, Wash., D.C.
202/358-1778

July 25, 1994

RELEASE: 94-114

SPACE RADAR LABORATORY MAKES SECOND FLIGHT

In August 1994, scientists around the world will again be provided a unique vantage point for studying how the Earth's global environment is changing when Endeavour begins the STS-68 Space Shuttle mission. During the 10 day mission, the Space Radar Laboratory (SRL) payload in Endeavour's cargo bay will make its second flight. The SRL payload, which first flew during STS-59 in April 1994, will again give scientists highly detailed information that will help them distinguish between human-induced environmental changes and other natural forms of change. NASA will distribute the data to the international scientific community so that this essential research is available worldwide to assist people in making informed decisions about protecting the environment.

Leading the STS-68 crew will be Mission Commander Michael A. Baker, who will be making his third flight. Pilot for the mission is Terrence W. Wilcutt, who is making his first flight. The four mission specialists aboard Endeavour are Thomas D. Jones, the Payload Commander, who will be making his second flight; Steven L. Smith who will be making his first flight; Daniel W. Bursch, who will be making his second flight; and Peter J.K. Wisoff, who will be making his second flight.

Launch of Endeavour currently is scheduled for no earlier than August 18, 1994, at 5:54 a.m. CDT. The planned mission duration is 10 days, 4 hours, 40 minutes. With an on-time launch on August 18, Endeavour's landing would take place at 10:34 a.m. CDT on August 28 at the Kennedy Space Center's Shuttle Landing Facility.

The SRL payload is comprised of the Spaceborne Imaging Radar-C/X-Band Synthetic Aperture Radar (SIR-C/X-SAR), and the Measurement of Air Pollution from Satellite (MAPS). The German Space Agency (DARA) and the Italian Space Agency (ASI) are providing the X-SAR instrument.

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The imaging radar of the SIR-C/X-SAR instruments has the ability to make measurements over virtually any region at any time, regardless of weather or sunlight conditions. The radar waves can penetrate clouds, and under certain conditions, also can "see" through vegetation, ice and extremely dry sand. In many cases, radar is the only way scientists can explore inaccessible regions of the Earth's surface.

The SIR-C/X-SAR radar data provide information about how many of Earth's complex systems (those processes that control the movement of land, water, air and life) work together to make this a livable planet. The science team particularly wants to study the amount of vegetation coverage, the extent of snow packs, wetlands areas, geologic features such as rock types and their distribution, volcanic activity, ocean wave heights and wind speed. STS-68 will fly over the same sites that STS-59 observed so that scientists will be able to study seasonal changes that may have occurred in those areas between the missions.

An international team of 49 science investigators and three associates will conduct the SIR-C/X-SAR experiments. Thirteen nations are represented: Australia, Austria, Brazil, Canada, China, the United Kingdom, France, Germany, Italy, Japan, Mexico, Saudi Arabia and the United States.

The MAPS experiment will measure the global distribution of carbon monoxide in the troposphere, or lower atmosphere. Measurements of carbon monoxide, an important element in several chemical cycles, provide scientists with indications of how well the atmosphere can cleanse itself of "greenhouse gases," chemicals that can increase the atmosphere's temperature.

STS-68 will see the continuation of NASA's Get Away Special (GAS) experiments program. The project gives a person or organization a chance to perform experiments in space on a Shuttle mission. Two universities, North Carolina A&T State University and University of Alabama in Huntsville, and the Swedish Space Corp., Soina, Sweden, will have small self-contained payloads flying during the STS-68 mission. Other GAS hardware in Endeavour's payload bay will carry 500,000 commemorative stamps for the U.S. Postal Service in recognition of the 25th anniversary of the Apollo 11 Moon landing.

Other payloads aboard Endeavour include the Biological Research in Canister (BRIC) which will fly for the first time, and the Military Applications of Ship Tracks (MAST) which will be making its second flight. BRIC experiments, sponsored by NASA's Office of Life and Microgravity Sciences and Applications, are designed to examine the effects of microgravity on a wide range of physiological processes in higher order plants and arthropod animals (e.g., insects, spiders, centipedes, crustaceans). MAST is an experiment sponsored by the Office of Naval Research (ONR) and is part of a 5-year research program developed by ONR to examine the effects of ships on the marine environment.

The Commercial Protein Crystal Growth (CPCG) experiment, the Chromosome and Plant Cell Division in Space Experiment (CHROMEX) and the Cosmic Radiation Effects and Activation Monitor (CREAM) experiment also will be carried aboard Endeavour.

Shuttle Mission STS-68 will be the 7th flight of Endeavour and the 64th flight of the Space Shuttle System.

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MEDIA SERVICES INFORMATION

NASA Television Transmission

NASA Television is available through Spacenet-2, Transponder 5, located at 69 degrees west longitude with horizontal polarization. Frequency is 3880.0 MHz, audio is 6.8 MHz.

The schedule for television transmissions from the Shuttle and for mission briefings will be available during the mission at Kennedy Space Center, Fla; Marshall Space Flight Center, Huntsville, Ala.; Dryden Flight Research Center, Edwards, Calif.; Johnson Space Center, Houston, and NASA Headquarters, Washington, D.C. The television schedule will be updated to reflect changes dictated by mission operations.

Television schedules also may be obtained by calling COMSTOR 713/483-5817. COMSTOR is a computer data base service requiring the use of a telephone modem. A voice report of the television schedule is updated daily at 11 a.m. CDT time.

Status Reports

Status reports on countdown and mission progress, on-orbit activities and landing operations will be produced by the appropriate NASA newscenter.

Briefings

A mission briefing schedule will be issued prior to launch. During the mission, status briefings by a flight director or mission operations representative and when appropriate, representatives from the payload team, will occur at least once per day. The updated NASA Television schedule will indicate when mission briefings are planned.

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Kyle Herring
RELEASE: 94-062

For Release:
September 2, 1994

SPACE SHUTTLE CREW NAMED FOR SECOND MIR DOCKING MISSION

NASA's second Space Shuttle mission to rendezvous and dock with the Russian Space Station Mir, scheduled for October 1995, will be commanded by U.S. Marine Corps Colonel Kenneth D. Cameron.

Joining Cameron on the STS-74 mission are U.S. Air Force (USAF) Lieutenant Colonel James D. Halsell, Jr., pilot, and USAF Colonel Jerry L. Ross, U.S. Army Lieutenant Colonel William S. McArthur, Jr., and Canadian Air Force Major Chris A. Hadfield.

The primary objective of the six-day flight is to attach a permanent Russian docking module to an orbiter docking system using the Shuttle's robot arm, before placing the docking module onto the Mir Space Station, where it will remain for use during future joint U.S.-Russian missions. Throughout the flight, various life sciences investigations will be performed.

Cameron, 44, has flown twice before on the Shuttle, during STS-37 in April 1991 and STS-56 in April 1993. Most recently he was NASA director of operations, Russia, where he worked with Russian trainers, engineers and flight controllers to support the training of astronauts at Star City and to enhance continued cooperation between NASA and Russia's Space Agency.

Cameron was born in Cleveland, Ohio, and received both his bachelor and master of science degrees in aeronautics and astronautics from the Massachusetts Institute of Technology in 1978 and 1979, respectively.

Halsell, 37, flew on the STS-65 mission in July and was born in Monroe, La. He received a bachelor of science degree in engineering from the Air Force Academy in 1978, a master of science degree in management from Troy University in 1983, and a master of science degree in space operations from the Air Force Institute of Technology in 1985.

Ross, 46, has flown four previous times aboard the Shuttle, during STS 61-B in November 1985, STS-27 in December 1988, STS-37 in April 1991 and STS-55 in April 1993. Ross has conducted four spacewalks on two of those missions. He was born in Crown Point, Ind., and received his bachelor and master of science degrees in mechanical engineering from Purdue University in 1970 and 1972, respectively.

McArthur, 43, flew on the STS-58 mission in October 1993. He was born in Laurinburg, N.C., and considers Wakulla, N.C., his hometown. McArthur received a bachelor of science degree in applied science and engineering from the U.S. Military Academy in 1973 and a master of science degree in aerospace engineering from the Georgia Institute of Technology in 1983.

Hadfield, 35, was born in Sarnia, Ontario, Canada, and grew up in Milton, Ontario. He received a bachelors degree in mechanical engineering from the Royal Military College, Kingston, Ontario, Canada, in 1982 and a master of science degree in aviation systems from the University of Tennessee in 1992. STS-74 will be Hadfield's first Shuttle mission. He is a member of the astronaut class of 1992.

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Kyle Herring
RELEASE: 94-063

For Release:
September 6, 1994

CABANA APPOINTED CHIEF OF ASTRONAUT OFFICE

Col. Robert D. Cabana, USMC, has been appointed chief of the Johnson Space Center's Astronaut Office, effective today.

Cabana will replace current chief Capt. Robert L. "Hoot" Gibson, USN, recently named to command STS-71, the first Shuttle mission to dock with Russia's Mir space station. The changes were announced by David C. Leestma, director of Flight Crew Operations.

"I am confident that Bob will be an effective leader, and his experience and skills are valuable assets," Leestma said. "This move allows Hoot to devote his full attention and time to commanding the challenging STS-71 mission set to launch in 1995."

Cabana is a veteran of three Shuttle flights -- STS-41 in 1990, STS-53 in 1992, and STS-65 this past July. Cabana served as pilot on his first two missions and as commander on the record-setting International Microgravity Laboratory-2 flight earlier this year.

On STS-41, the five-member crew of Discovery deployed the Ulysses spacecraft to begin its four-year journey through the Solar System. STS-53 was a week-long dedicated Department of Defense mission during which the crew deployed a satellite and conducted a variety of experiments.

Cabana's most recent mission was STS-65, the second flight of the International Microgravity Payload. The seven-member crew of Columbia spent more than 14 days in space establishing a new Shuttle endurance record and conducting a variety of physiological and materials processing studies in the microgravity environment.

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"I am very pleased to have this opportunity," Cabana said. "I am looking forward to leading the dedicated people who make up the astronaut corps."

Gibson will continue his training as commander for STS-71 leading a crew of seven, including two Russian cosmonauts. The orbiter will dock with the Mir space station, leaving the two cosmonauts on board Mir and returning to Earth with fellow astronaut Norm Thagard and his two Mir crewmates, who will have spent three months at the station.

Gibson first flew as a pilot on STS-41B in February 1984, a mission that deployed two commercial communication satellites and featured the successful checkout of the Manned Maneuvering Unit. Gibson commanded STS-61C in January 1986, during which a SATCOM-KU satellite was deployed, and STS-27, a dedicated Deppartment of Defense mission, in December 1988. Gibson also commanded STS-47 in September 1992, a cooperative Spacelab mission with the National Space Development Agency of Japan.

"I have been honored to work with the talented men and women of the Astronaut Office during my tenure as chief, and I am sure that Bob will enjoy their full support," Gibson said. "Now, I look forward to commanding this very challenging and exciting mission as we begin our cooperative space ventures with Russia."

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NASA News

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NASA SIGNS LEASE/PURCHASE PACT FOR CLEAR LAKE DEVELOPMENT FACILITY

NASA today signed a firm, fixed-price $34 million lease/purchase agreement with the McDonnell Douglas Corporation to acquire real estate and facilities at the Clear Lake Development Facility, near the Johnson Space Center (JSC), Houston, TX.

Under terms of the contract, McDonnell Douglas will turn over to NASA a group of three large, modern industrial buildings and surrounding property and will build the Neutral Buoyancy Laboratory (NBL) in one of the buildings. These facilities will be leased by NASA until authority to complete actual acquisition is secured from Congress.

In addition to providing Shuttle operations training, NASA needs the NBL to train astronauts for Space Station assembly, which will involve the most extensive and complex EVAs ever attempted. Since existing weightless environment training facilities are inadequate to meet future extravehicular activities (EVA) training requirements, NASA developed plans to build the NBL.

The existing 101,000 square foot Assembly and Test Building will house a 101-foot wide by 202-foot long water tank, 40 feet deep, where astronauts will simulate spacewalks such as those required to service the Hubble Space Telescope or assemble the 831,000 pound Space Station. Segments of the Space Station will be delivered to orbit beginning in November 1997 on U.S. Space Shuttles, Russian and European launch vehicles and assembled in space by astronauts.

"This arrangement has numerous advantages," said Wilbur Trafton, Space Station Director. "It increases our confidence of delivering the NBL on schedule and on cost and it will be available earlier so that important training can begin." Trafton added that avionics facilities will be co-located with the NBL to increase program efficiency.

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NASA had planned to build the NBL on site at JSC. Under this new agreement, McDonnell Douglas will construct the NBL off site in the 101,000 square foot Assembly and Test Building and will deliver the NBL at least six months earlier than previously planned, allowing training not otherwise possible for early Space Station flights. Construction of the new facility will eliminate expensive dual shift training operations at JSC and the Marshall Space Flight Center, Huntsville, AL. The agreement also will produce additional savings from the early shut down of JSC's existing underwater training facility. The building that will house the NBL also is large enough to carry out more concurrent activities, increasing training efficiency.

NASA will use the two other buildings - the 97,000 square foot Light Manufacturing Facility (LMF) and the 51,000 square foot Avionics Development Facility (ADF) -- for laboratory, technical support facilities and office space in excess of existing onsite and leased space. NASA will build, modify and store training mockups in the LMF. The ADF will provide contiguous laboratory space for avionics equipment and associated software development, integration and test activities.

Under the agreement, NASA also will acquire the 13-acre property surrounding the Clear Lake Development Facility including a parking lot and private access to Ellington Field.

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SPACE STATION NODE 1 AND LABORATORY MODULES SUCCESSFULLY COMPLETE PROOF PRESSURE TESTS

The first U.S. component of the International Space Station, Node 1, and the U.S. laboratory module have successfully completed proof pressure tests.

Today, Boeing engineers conducted a proof pressure test on Node 1 at NASA's Marshall Space Flight Center (MSFC) in Huntsville, Alabama. During the four hour test, the node was successfully pressurized to 22.8 pounds per square inch gauge (PSIG), or 1.5 times the normal maximum operating pressure of the International Space Station pressurized elements. A structural design modification that has been incorporated into the node substantially reduced the stress levels previously encountered in the radial port low wall gussets.

Node 1, the first U.S. space station component is scheduled to be launched in December 1997. The nodes serve as connecting passageways to other modules on the International Space Station. With the proof pressure test now completed on Node 1, it will be moved out of the test facility and returned to the Space Station manufacturing building at MSFC where it will be prepared for assembly and check-out activities that begin in mid-October.

This past Sunday, Aug. 25, the U.S. laboratory module also successfully completed its proof pressure test. Like the Node 1, the lab module also was pressurized to 22.8 PSIG, or one and a half times it's normal maximum operating pressure requirement on-orbit. Data analysis indicated the module had excellent performance during the pressure test.

Having completed it's proof pressure test, the lab welds now are being inspected. The lab will undergo leak tests in mid-September. It will then be moved back to the Space Station manufacturing building in late September.

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NOTE TO EDITORS No: 96-029

STS-79 CREW RETURN

STS-79 astronauts William Readdy, Terrence Wilcutt, Jay Apt, Thomas Akers, Carl Walz, and Shannon Lucid are scheduled to land Thursday morning at the Kennedy Space Center at 8:12 EDT aboard the Space Shuttle Atlantis.

The crew will remain overnight in Florida and will return to Houston early to mid-afternoon on Friday, September 27, making their first public appearance and post flight statements on arrival at Ellington Field near the Johnson Space Center. A similar crew return scenario will be followed should weather conditions at the primary KSC landing site delay the landing or force it to be redirected to the secondary landing site at Edwards, California.

Activities at Ellington will be carried live on NASA television, and facilities will be in place for media coverage of the event. Access to press facilities at Ellington will require either an STS-79 press badge or a NASA media badge, which can be obtained from the Johnson Space Center news room at (713) 483-5111.

Shannon Lucid's participation in the Ellington event will depend on her physical condition and adaptation to the return to Earth as determined by NASA flight surgeons based on initial examinations and test results.

Reporters and news organizations interested in covering the astronauts' return should stay in close touch with the JSC news room and should expect further updates Friday morning, September 27 on timing of the event and crew participation.

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